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AN ADMINISTRATIVE REVIEW OF AN EARLY READING INTERVENTION

by

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The purpose of this study was to review the effectiveness of an early reading tutorial program, known as Intensive Care Assures Reading Enhancement (ICARE). The program was developed by the Davidson County School system (North Carolina) to assist first graders who were experiencing difficulty with reading. The ICARE program was patterned after the Reading Recovery program with an additional phonemic awareness component. The study attempted to determine if students who participated in ICARE would perform at the same level as their peers. Alternatively, the effectiveness of the program was compared to the effectiveness of traditional interventions used in the school system. The study also compared the monetary cost of ICARE to traditional reading intervention programs.

ICARE encompassed rural elementary schools in a single school system. Three cohorts of students who participated in ICARE were studied. The total number of students was 334. Data were obtained through various testing programs already in place in the school district. Achievement indicators included a district-wide reading assessment, the reading section of the California Achievement Test, and an informal screening

assessment. Academic performance indicators included special education referral rates, grade retentions, and reading grades.

In the first design of the study, students treated by ICARE were compared to district norms for achievement and academic success. The second design of the study compared students treated by ICARE to a matched control group that were treated by traditional means. The third design of the study compared the expenditure per child in ICARE to traditional alternatives.

ICARE did not bring its participants up to the district norm. ICARE did compare favorably to traditional interventions. The program was shown to have a marked impact on student achievement on the reading screening assessment. The findings also indicated that ICARE treated students at a fraction of the cost of any traditional intervention the school system had in place.

This study provided a framework for other administrators to use when reviewing intervention programs instituted in their purview.

APPROVAL PAGE

This dissertation has been approved by the following committee of the

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TABLE OF CONTENTS

CHAPTER I

INTRODUCTION

"Virtually every child can learn to read."
(Slavin, Karweit & Wasik, 1994)

The fact that so many children fail to attain necessary reading skills reflects not only failure for children but the inadequacy of schools to meet the needs of every child (Slavin & Madden, 1989). More than one in five school children in the United States is considered at-risk of school failure (Frymier & Gansneder, 1989). For educators, policy makers, researchers, and the public, improving these children's schooling is an increasingly urgent concern. Despite extra resources from the federal government and recent educational reforms, at-risk students experience failure disproportionately in their early years, and they often leave school ill-equipped for adult life.

No skill is more basic to success in school than reading ability (Juel, 1988). In the past 10 years, there has been an increased emphasis on early reading intervention programs for young children who are at-risk for reading failure. Reading success in the early grades appears to be an essential basis for success in the later grades with first grade being a critical year for the learning of reading (Hiebert, 1991; Clay, 1979; Forell, 1985). Children who get off to a significantly slow start in reading during first grade do not

generally catch up with their peers (Carter, 1984). Once a child receives the failure label and sees himself as a failure, he rarely succeeds in school (Lloyd, 1984). Therefore, providing at-risk students with early reading intervention programs to keep them at the same level with their peers in the early grades makes much more sense than to attempt to remediate them in the later grades.

School administrators have a duty to become knowledgeable about instructional programs. Particularly, administrators need to be capable of reviewing various alternative approaches to responding to children who find learning to read difficult. Today's administrators are faced with difficult decisions about the most appropriate way to allocate limited funds to effective practices. Administrators must be fluent in the languages of achievement testing and program reviewing. This fluency along with a firm understanding of cost measurement will allow them to make prudent decisions about reading intervention programs in their schools (Slavin, Karweit, & Wasik, 1994; Allington & Walmsley, 1995; Hiebert & Taylor, 1994).

While most schools are required to conduct evaluations of their Chapter 1 programs, few schools report actually using the evaluation data once collected (David, 1988). In Davidson County Schools standardized test scores are often only casually reviewed and then filed without analysis of how the results might be used to improve general or individual reading instruction. Current evaluations of early reading intervention programs in Davidson County Schools do not focus on comparisons across multiple

approaches but rather focus on achievement gains of the individual program. King (1994) also found similar activities when he reviewed evaluations of reading programs.

If there is a "window of time" that is critical for learning to read, a reading intervention program may be justified and cost-effective. The overarching purpose of this study was to review administratively a single one-on-one first grade reading tutorial program through multiple lenses to determine if the program was effective and of a reasonable cost. The study reported here will be beneficial to local and state officials by providing a framework for the evaluation of early reading intervention programs. It will furnish administrators with data to guide their decision-making regarding allocation of scarce resources when coping with the growing at-risk population. Specifically, it will afford the district data on the effectiveness of a one-on-one tutorial program as measured by achievement and academic performance indicators as well as costs.

Scope of the Study

This study examined a tutorial first grade reading intervention program called Intensive Care Assures Reading Enhancement (ICARE). The ICARE program encompassed 13 rural elementary schools. These schools were located in the same rural school system in a southeastern state. Data were collected during the three years the program has been in operation. Three cohorts of students who participated in the ICARE program in the first grade were studied. The total number of ICARE students was 334.

The study analyzed the effectiveness of the program in attaining its goal of raising the reading level of 80% of the program's participants to the average level of their class. Additionally, the effects of the program on participants' reading level, achievement test scores, and academic performance were compared to students treated by other traditional programs.

Definitions

At-risk student- A student whose intelligence is within normal limits but who is failing to achieve the basic skills necessary for success in school (Slavin, Karweit, and Madden, 1989).

ICARE student- A first grader who is not moving ahead in reading and is determined to be at-risk, based on teacher recommendation and instrument tests of alphabet knowledge, concept of word, phonemic awareness, and word recognition.

ICARE tutorial program- A homespun temporary reading intervention program that provides one-on-one tutorials to first graders experiencing reading difficulties. The program incorporates concepts primarily from Darrell Morris and Marie Clay's Reading Recovery program. In the highly structured individualized program, the teacher and

student meet daily for 30 minutes for one semester (four and one-half months) to move select students rapidly to functioning at the average reading level of the class.

ICARE Teacher - A formally appointed certified teacher employed on a half-time basis specifically for the ICARE program.

Assumptions

The review of any program must be based on certain assumptions. Most of the assumptions for this review will be based on the review of literature. Three assumptions are self-evident. The assumptions underlying this study concerning the ICARE program were as follows:

A teacher will consistently rate children as at-risk on the same basis.

When at-risk first graders achieve success at reading, they succeed better in school.

When at-risk students read better, their reading achievement scores will show improvement.

Limitations of the Study

1. This study is limited to elementary schools in a single rural school system that is implementing the ICARE program.

2. Students selected to participate in the ICARE program were required to have parental support, teacher recommendations, and low scores on a local screening instrument which tested alphabet knowledge, concept of word, phonemic awareness, and word recognition. The evaluation is based on students served by the program.
3. The data used were originally collected for purposes other than administrative review.
4. The data for this study were limited to district collected and reported information.
5. The district utilized local assessments extensively in place of nationally recognized tests.
6. Once a student was retained after his participation in the program, testing on that student was terminated.

Methodology

The study is broken into three separate designs. Each of these designs is intended to investigate a specific issue in relation to the ICARE program. First, achievement and academic performance data for participants were compared longitudinally to the district norms to ascertain if students served by the program were performing at district norms. Second, achievement and academic performance data were compared longitudinally to

students of similar character not served by the ICARE program to compare the program to traditional methods. Third, the cost for each ICARE student was compared to traditional interventions, and a marginal cost analysis was performed.

Specifically, the following research questions were used to investigate the effectiveness of the ICARE program:

1. Did the ICARE program meet its goals of raising students' reading skills to district norms?
2. Was ICARE more effective than traditional methods of reading interventions available in Davidson County?
3. Was ICARE more cost-effective than other traditional methods of reading interventions over time?

Organization of the Dissertation

School leaders are searching for methods to prevent reading problems. Research has indicated that there are many successful approaches to help at-risk first graders develop successful reading strategies. This study documents the effectiveness of the ICARE program in terms of district norms, comparison to traditional interventions, and cost comparisons.

Chapter II consists of a review of the relevant literature. Included in this section is information on the need for reading intervention programs, effects of traditional

interventions, the characteristics of effective reading interventions, a description of the Reading Recovery program and related research, a description of the ICARE program, and the methods used for administratively reviewing reading interventions.

Chapter III reports the methods and procedures of the study. A description of control groups and cohorts is included. Tables displaying demographic information and data set information are also provided.

Chapter IV provides an analysis of data. Descriptive statistics and inferential statistics are presented and explained.

Chapter V provides a discussion of the findings, conclusions, implications, and recommendations. This section also contains suggestions for future research and changes in administrative policy.

CHAPTER II

LITERATURE REVIEW

Administrators have the responsibility for the learning environment in their purview. They are responsible for insuring the programs in their schools meet the standards of the district and state. Effective reading instruction is integral in administrators meeting these standards. Unfortunately, most administrators have little more than a rudimentary understanding of the issues related to reading programs. Jacobson, Reutzel, and Hollingsworth (1992) surveyed 1,244 elementary principals to determine their perceptions of their understanding of current issues in reading instruction. These researchers discovered that most practicing principals did not feel confident enough to provide a rationale for their stance on issues in reading instruction. This lack of confidence in stating a rationale can be detrimental when monitoring a reading intervention program in their school.

Hyde and Moore (1988) examined the classification of students for reading programs in two school districts. The study took the form of a qualitative analysis of school documents and interviews of administrators, central office staff, and teachers. From the interviews, researchers concluded that the principal had the potential at the

school level to deal with problems of overall program coordination between the regular classroom and special programs. Yet, the majority of principals did not tackle these coordination problems, deferring to the authority of central office coordinators and the professional autonomy of teachers.

When principals adopted this lassez-faire approach, one serious service quality problem that occurred was the failure to fix the responsibility for reading instruction. The responsibility for teaching particular children to read and for seeing that their reading instruction experience had continuity went unanswered. Likewise, when a child was participating in the regular reading program and was also involved in a pullout reading experience, there was characteristically no regular communication or planning between the teachers involved.

Such failures in communication often resulted in children being taught to read according to two entirely different reading strategies, forcing children who were already behind in reading to deal with different texts, different teaching methods, and different vocabulary. Therefore, the researchers remarked that a lack of administrative guidance could have an adverse effect on student achievement for at-risk students.

Anderson and Pellicer (1990) elucidated in their review of research on compensatory and remedial education, the crucial role administrators play in reading programs. They found that administrators are the principal players in instituting these

programs. When playing such a key role, the administrator should have a knowledge of the effects and underlying framework of reading intervention programs.

An issue critical to administrators, unique from the situation of a curriculum specialist, is the cost of reading intervention programs. Dyer and Brinkley (1995) restated the importance of cost in evaluating reading interventions. They used data from many studies to calculate estimates of the relative costs of the Reading Recovery program and the actual costs of several alternatives (conventional Chapter 1 programs, special education programs, and grade retention). Their review of costs highlighted the issues of hidden cost in conventional programs and cost saving from new innovations.

Not only are school administrators charged with managing cost, but they have a duty to become knowledgeable about reading programs. The success or failure of a school's reading program depends largely upon the quality of a school principal's knowledge of and involvement in the school reading program (McNinch & Richmond, 1983). Additionally, administrators need to be capable of evaluating various alternative approaches in responding to children who find learning to read difficult. Today's administrators are faced with difficult decisions about the most appropriate way to allocate limited funds to effective practices. Furthermore, it is incumbent upon school administrators to keep the school board informed of the progress being made with any program implemented.

The literature review was designed to provide a basis for the administrative review of Davidson County's domestic early reading intervention program (ICARE). This chapter is organized in four sections. The first section discusses the need for at-risk reading intervention programs in Davidson County Schools. This section reviews literature on the problems caused by reading failure in the early grades and combines district information with current research. The second section reviews characteristics and components of effective reading intervention programs. The third section reviews qualitative information and research pertaining to the Reading Recovery program. The Davidson County at-risk first grade reading intervention program, Intensive Care Assures Reading Enhancement (ICARE) is also discussed. The fourth section presents administrative review procedures for an at-risk reading intervention program. Key features presented in this section are the methods most appropriate for an administrator to use when calculating the effects and the costs involved with an early reading intervention program. The last section includes a summary.

The Need for Reading Programs

A major goal of education is the development of reading ability. Reading ability is the tool schools use to educate students in diverse topics such as mathematics, science, and social studies. To this end, schools need to ensure that students learn to read. If schools are to assist students in the development of life skills, they need to ensure that

their students do not fall behind in reading through the use of an effective reading intervention program.

In our society, six-year-olds enter the first grade expecting to learn to read. Their parents and teachers expect them to learn to read. Unfortunately, these expectations are not always met. Many first graders fall behind their peers in reading and stay behind for the course of their education. According to the 1994 National Assessment of Educational Progress (NAEP), only 30% of fourth graders were reading at or above the nationally set proficiency level. The levels identified for this study were basic, proficient, and advanced. Proficient level for fourth graders was the lowest level which required the student to make inferences, draw conclusions, and make connection to their personal life when reading fourth grade reading material (Williams, Reese, Campbell, Pazzeo, & Phillips, 1995).

In schools, reading is fundamental to many other pursuits. NAEP (1994) documented that 59% of students in public schools were expected to read 10 or more pages of school work each day. If children cannot read, they cannot be expected to succeed in a system that requires them to read.

Reading difficulties have serious consequences on the students affected and the district that attempts to meet their needs. This study investigated effects of reading difficulties in three categories: achievement, academic success, and cost. The following

sections review several studies that document the impact of reading difficulties in these three areas.

Achievement

One indicator of whether students are progressing well in learning to read is their performance on achievement tests. Achievement levels are often measured by standardized tests or informal assessment tests. Students who are experiencing reading difficulties can be expected to be performing poorly on achievement tests. A body of research exists that shows the impact of early reading difficulties on later achievement tests.

Juel (1988) examined the development of literacy in one elementary school. The reading and writing development of 54 children was followed as they progressed from first to fourth grade. According to Juel's simple view, reading is the product of decoding and comprehension. Several measures were used to answer the question, "Do the same children remain poor readers year after year?" Pretests and posttests of the Phonemic Awareness Test of Phonemic Segmentation, the Bryant Test of Basic Decoding Skills, The Iowa Test of Basic Skills (ITBS) and a word recognition test of 10 basal preprimer words were employed. Juel compared the reading development of the bottom quartile of children in reading comprehension to a group of average readers. Groupings were

determined by ITBS scores at the end of the first grade. Comparisons were then made at the end of fourth grade.

The results revealed a 0.88 probability a child would remain a poor reader at the end of fourth grade, if the child was originally a poor reader at the end of first grade; a poor reader in first grade stood only a 0.13 chance of being an average reader in fourth grade. The probability an average reader in first grade would remain average was 0.87; the same child stood only a 0.12 chance of becoming a poor reader by fourth grade. Aside from errors in calculating total probability, it can assuredly be said that students who fail to read well in the early grades will continue to have difficulties in school.

Juel studied continued effects of reading deficits in first grade. The picture continues to develop when looking at annual relationships. Carter (1984) found a high relationship between initial achievement and achievement after three years of schooling for four cohorts of students. He conducted a sustaining effects study (1975) designed primarily to study compensatory elementary education. Data were collected on as many as 120,000 students in a representative sample of over 300 elementary schools throughout the country for three successive school years. Data for the study consisted of home background and economic data for individual students and also achievement data for three successive years. In one section of the study, Carter analyzed the relative contributions of the students' background, the characteristics of the schools attended, and initial achievement to later student achievement. The data were analyzed using the

methods of causal analysis for four cohorts. Achievement was measured using the Comprehensive Test of Basic Skills (CTBS). The effect of initial achievement on achievement later in the school career was determined. Cohort 1 achievement data started in the first grade and were followed through the third grade and had a correlation coefficient of 0.44. The coefficient increased to 0.64 for cohort 2 (second through fourth grade), 0.65 for cohort 3 (third through fifth grade) , and up to 0.72 for cohort 4 (fourth through sixth grade). The strength of the relationship grew from cohort to cohort; which implied that as the student progresses through school, his level of performance became progressively more related to the previous level of performance. Carter warned of the danger of cumulative deficits: Children who are behind their age peers learn less and less over the years while their successful peers learn more and more.

The fact that the coefficient is the lowest for cohort 1 implied that there was a greater possibility of influencing future achievement in the first and second grades. Conversely, if no intervention is afforded at-risk students, the gap between good and poor students will widen as they are promoted through school.

From these studies, several statements can be made. First, students who do not read well by the end of first grade will, in all likelihood, continue to perform poorly on achievement measures. Secondly, over time the discrepancy between poor reader's performance and normal performance will increase. A final axiom is that poor readers do not score well on achievement tests. This issue may be the driving force behind the

demand for effective intervention programs. In an age wrought with achievement tests, students who read better will perform better on achievement tests.

Academic success

Academic success can be defined as how well the student is performing in the classroom. Students who do not have passing reading grades and are involved in remedial programs, special education programs, or have been retained can be construed as having academic difficulties. Without proper interventions, these students will continue to experience failure and may ultimately become drop-outs. When these difficulties are based on a reading problem, the solution should be some form of reading intervention. A body of research has elucidated the impact of reading difficulties on academic performance.

Lloyd (1978) extended a previous investigation of sixth graders to determine whether prediction of secondary school completion can be made from data in the third grade. She wanted to provide a multidimensional framework for prediction of academic success (as indicated by high school graduation). Several school factors with significance to the evaluation of reading programs were studied. All significant correlations were in the expected direction with graduation from high school associated with home environment, higher grades, higher California Achievement Test scores (CAT), and fewer retentions between the first and third grade. The combination of predictors produced a

multiple correlation with graduation of .51 for boys and .49 for girls. Although the factors of third grade reading grades, CAT reading scores, and retentions were not the only indicators used in the study, they did show an effect on the probability of high school graduation. For boys the correlations to graduation were 0.30, 0.37, and -.27 respectively. For girls, the correlations were 0.35, 0.34, and -.27. All of these factors showed significant correlation to academic success. Thus, Lloyd concluded that the paths to educational success and failure become divergent as early as the third grade. A segment of those paths includes the ability to read.

Building on the previous section, we know that children who are poor readers score poorly on reading achievement tests (Juel, 1988). These low scores on achievement tests have been shown to correlate to students' lack of success in school. Additionally, students' low grades in reading have a correlation to poor success in school. Finally, children who are retained for any reason are less likely to succeed in school (Lloyd, 1978). Reading difficulties can contribute to low reading grades and poor achievement test scores which result in retention. It is the hope of administrators that effective reading intervention programs will affect reading grades, achievement test scores, and retention rates, thus causing a positive impact on students' success in school. An additional hope of administrators is that the effective reading intervention program will impact all at-risk students. Also, when reviewing an intervention program administrators should take into account whether the intervention is appropriate for their particular school.

Cost

The cost of poor readers is a burden on school resources. Many districts feel pressured to become more cost efficient. Because programs to assist at-risk readers cost money, many districts are concerned that they are expending valuable resources without achieving the desired results for these students. The magnitude of these expenditures can be seen in the reports of the federal Chapter 1 program. In 1992-93 alone, the government expended 6.2 billion dollars on the Chapter 1 program (LeTendre, 1991). Federal spending on special education programs in 1985 was 1.64 billion dollars (Gartner & Lipsky, 1987). The issue is not limited to federal expenditures alone; Davidson County Schools in the 1995-1996 school year will spend $407,243.11 in retaining just first grade students. This expense is considerable for Davidson County's limited budget. District administrators want to be assured that they are not spending money wastefully on expensive programs when more economical alternatives are available.

Chambers and Hartman (1981) in a federally funded review of state categorical funding systems made some important statements about cost. The first of these statements was that a common method of viewing the cost of educational programs is to discern cost as the amount of funding required above normal expenses for educating a child. The second was a proposed funding system. In their proposed system, total program costs were calculated by figuring the additional resources used for the program. This cost was adjusted by subtracting cost savings realized in the school by

implementation of the program in question. In this way, a realistic view of program cost could be produced. This system is useful in estimating the cost of an effective intervention. Dyer (1992) used a similar framework for determining the cost of Reading Recovery interventions.

Consequently, administrators who are considering any instructional intervention that requires substantial expenditures should realistically weigh the apparent costs against the potential cost savings in other areas. For example, a decrease in retentions or special education referrals may offset the expense of an effective reading intervention program. These decreased expenses may cause an expensive program to actually save the school system money.

The need for reading intervention programs in Davidson County

Davidson County schools has the goal of meeting the needs of all children in the district. With the realization that some students entered high school as non-readers, coupled with low CAT scores, it became obvious the district was not achieving its goal. A longitudinal study of the district's CAT scores for the years 1989-1992 revealed four elementary schools performing below national norms in reading. The faculty of two of the elementary schools requested intensive reading programs in their School Improvement Plans. Therefore, in the 1992-93 school year, Davidson County central office administrators began searching for approaches to prevent reading failure. Since the

district is both rural and conservative, a system-wide change would be slow and difficult. An early reading intervention seemed a more expedient method of achieving the district's goal. Reading Recovery was explored as an early intervention program; however, funding was not readily available to begin this expensive program.

District administrators were impressed by the test results from studies of the Reading Recovery program. The increase in performance held promise of an increase in district test scores and an end to students leaving elementary school without the ability to read. The administrators' focus on reading became to have students develop the ability to think, problem solve, and reach consensus on meaning. The major prerequisite for these outcomes was the ability to read and comprehend.

Traditionally, Davidson County dealt with reading failure through the use of either Chapter 1 programs, special education referrals, or grade retention. All these programs were firmly founded in a behaviorist paradigm. Their modes of action utilized skill and drill procedures to enhance reading ability. These skills were taught in isolation and reinforced through worksheets. Disenchanted with these reading methods, district administrators began the search for an inexpensive effective reading intervention program which more closely aligned with their focus.

This situation is not unique to Davidson County. The literature documents similar problems in many different settings. Upon review of the effects of traditional reading interventions, many educators believe new alternatives need to be explored. There

is a sense that effective interventions in first grade will pay off in later achievement. This pay off will be seen as a reduced need for special education and other remedial programs. The rationale to new alternatives is to start students off with success, and they will build on this success throughout their school careers. Much of the interest in early childhood interventions focuses on at-risk students who are believed to fall behind in basic skills in the early grades and never catch up (Slavin, Karweit, & Wasik, 1994).

Traditional responses to reading difficulties

The most common responses of school to reading failure (retention, remediation, and special education services) rarely alter the academic status of children who do not acquire literacy early and easily (Birman, 1988; Juel, 1988; Slavin & Madden, 1989).

Allington, Stuetzel, Shake, & Lamarche (1986) in their study of remedial reading programs observed skill and drill approaches to reading difficulties Remedial teachers served as a managers and offered little direct instruction. The major task of teachers observed was to distribute and correct academic work.

In their descriptive study, the researchers investigated remedial reading instruction in five classrooms in four different school districts over a six-month period of time. The remedial programs were either federally funded Chapter 1 programs or state funded Pupils with Special Educational Needs (PSEN) programs. Four of the five remedial programs were organized around a pull-out model where the students left the room for

remediation. The fifth was an in-class remediation program in which instruction was delivered by a certified teacher employed in a teacher aide position in the mainstream classroom. The researchers gathered observational data on 27 remedial students.

In the study, 40 observations were completed with two observers present for 29 observation days. Data was examined in the focus of two categories--directed reading activities and indirect reading. Direct reading activities always involved students responding to print in the same direction as they would if they were actually reading. Indirect reading activities included manipulating materials, writing, listening, or discussing without reading silently or orally.

In the remedial programs observed, roughly one-third of the time was spent in direct activities, one-third in indirect reading, and one-third in non-academic activities. Sentence and word level activities accounted for the greatest amount of direct reading time. In the indirect reading category approximately one-half of the time was spent at the paragraph level with most of the remaining time focused on letter, words, and sounds. This time indicated a student was not directly involved with print but was, instead, listening to or talking about but not actually reading words, sounds, or sentences.

For a variety of reasons, one-third of the allocated time was not used for academic tasks. Sometimes the children did not arrive on schedule; sometimes the teacher was not prepared to begin a lesson when they arrived; sometimes students simply waited for papers to be checked or for a word to be pronounced or to have a worksheet explained.

If these analyses of time allocation were considered typical of many remedial reading sessions, one could expect in a 30-minute session in which roughly 10 and 1/2 minutes would be spent on direct reading activities, 9 minutes on indirect reading activities, and 10 and 1/2 minutes on non-reading activities.

Review of the materials used in the remedial programs revealed that teachers rarely used basal reader materials and instead primarily employed a number of different remedial materials. These materials almost invariably had some single skill focus and relatively few offered selections longer than a paragraph; much remedial time was spent completing independent workbook or worksheet activities. Rarely was instruction offered that provided a student with a comprehension strategy, for instance, for determining the main idea of a paragraph. Rather, students were given main idea worksheets or workbooks where they were to select the correct response. The teacher became a monitor, correcting papers, rather than an instructor. Never did the researchers observe a remedial teacher attempting to demonstrate the transferability of a skill from the worksheet to a classroom or other reading activity. The focus of the majority of instruction was production of the correct answer, not the process or strategy one could use to derive a correct answer, nor the utility of the skill in classroom or out-of-school reading.

This study of remedial programs pointed out several of the common failings associated with all traditional remedial education programs. These problems had multiple implications for students being served. Generally, traditional remedial programs involve

instruction aimed at skills and drills, and students are viewed as passive learners. Also, students are not taught reading strategies to help them in self correction, rather they are simply corrected by the teacher.

Three traditional responses to reading difficulties are commonly employed in schools around the country, including Davidson County schools. These responses are reviewed individually to understand the particular problems of each approach.

Chapter 1 program

Chapter 1 is a compensatory program legislated in 1965. In the intervening 30 years, it has become the largest federal program of assistance to elementary and secondary schools (Fagan & Heid, 1991). By 1987, one out of every nine students was served by Chapter 1 funded programs (Birman, 1988). Students are selected to participate on the basis of their schools' poverty and their own low achievement; they typically receive supplemental instruction in reading, mathematics, or both, in addition to the regular instruction provided by their schools. Chapter 1 is primarily an elementary school program that offers basic skills instruction. Often this instruction is in the form of a pull-out program that occurs daily for 30 to 35 minutes each day. Almost all Chapter 1 elementary schools rely primarily on certified teachers to provide instruction, though many work with an aide (Birman, 1988).

In 1992-1993 alone, the Chapter 1 budget was 6.2 billion dollars (LeTendre, 1991). This is a major monetary outlay for a program. Unfortunately, the results of this funding are not as encouraging as the legislation had originally envisioned. Fagan & Heid (1991) relied on data from a variety of sources, including aggregated achievement data collected for the U. S. Department of Education, to substantiate that students who received Chapter 1 services experienced larger increases in their standardized achievement test scores than comparable students who did not receive Chapter 1 services. However, their gains did not move them substantially toward the achievement levels of more advantaged students.

The results of small scale studies concerned the government enough to fund a large scale evaluation of the program in 1975. Carter (1984) synthesized a sustaining effects study elucidating the actual impact of the Chapter 1 program. She was able to make some very pointed statements about the program. Most importantly, the students who did the best in Chapter 1 programs were those who were not very far behind to begin with--those who needed help the least. These programs have had a "positive but marginal impact." Statistical analysis showed significant reading gains for Chapter 1 students CTBS scores in grades 1-3, but not in grades 4-6.

The Second Interim Report to Congress on the operation of the Chapter 1 program documented several disheartening facts. A two percent difference between the proportion of children eligible for services in first grade and in sixth grade suggested that

Chapter 1 programs generally have a minimal impact on the achievement of at-risk children. Also, Chapter 1 participation produced only small short term achievement gains; therefore, children typically remained enrolled in the Chapter 1 program for an average of five years or until the program is no longer available at their grade level (Kennedy, Birman, & Demaline, 1986).

Davidson County Schools provides Chapter 1 services in nine out of 13 elementary schools. The reading portion of the program is organized as small group pull-out instruction. All instructors are certified teachers and instruction revolves around a behaviorist paradigm where students are inundated with supplemental worksheets to reinforce isolated reading skills. Assessment of students in the Chapter 1 program on the reading subtests of the CAT revealed the average NCE score for this group was 35, which is significantly below the national norm of 50.

Special education program

In 1975, Public law 92-142 was passed. School districts have provided services for handicapped students, ranging from special classes to special schools and various part-time placements. In these programs, students typically receive instruction in very small groups from teachers with certification in special education.

Eligibility for special education depends on assessments of individual students' levels of functioning. This law defined learning disability as a term and, in doing so,

created programs for dealing with children who exhibit a gap between achievement level and their intelligence level (Kavale, 1988). The definition of reading learning disability includes the statement that the child must exhibit impairment in the acquisition of reading abilities. In labeling a child, no direct evidence of neurological dysfunction is required (Allington & Walmsley, 1995). Many children are referred to special education programs on the basis of a failure to read, and they often remain in special education for their entire school careers (Allington & McGill-Franzen, 1989). These children make up half the total national special education population (McGill-Franzen, 1987; Singer and Butler, 1987).

The federal government expended 1.64 billion dollars in 1985 to support public law 94-142. This accounted for 8.5% of the costs of special education programs. The balance of the cost was brunted by states and local government (Gartner & Lipsky, 1987). This translates to special education students being a major burden on the school system serving them. For this major expenditure, one would hope to see results in the form of student achievement or academic success.

In a letter to Alan Gartner, the deputy director of the federal office for special education stated that the federal government had no data on the performance of special education students in regular classroom settings or compared to non special education students (Gartner & Lipsky, 1987). This statement translates into no data being available

to support the idea that special education programs help learning disabled students achieve or perform at levels comparable to their non-disabled peers.

A federally funded University of Minnesota evaluation (1988) reviewed school documents to determine characteristic performance of students in all special education categories. From their review several astounding issues were raised. First, students with learning disabilities exhibited an average of performing in the twentieth percentile in class standing. This was a lower performance level than mildly mentally retarded students. The grade point average of learning disabled students was also lower than that of mildly mentally retarded students (and regular education students). Finally, the graduation rate for these students was 70%. This level was again lower than that of mildly mentally retarded students (Bruininks, Thurlow, Lewis, & Larson, 1988). From these data, it becomes obvious that the special education program for learning disabilities does not bring student performance up to levels comparable to their more seriously disabled peers much less their non-disabled peers.

Lyons (1989) showed that with appropriate instruction learning disabled reading students can be remediated to perform at an equal level with their non-disabled peers. The study included 30 learning disabled first-graders and 30 at-risk first graders in her study. Each group received Reading Recovery lessons. Data were collected from oral reading records (running records). An analysis of the running records identified the cueing system(s) the child attended and provided a reliable, systematic way of identifying how

the reader monitored and corrected performance while reading increasingly difficult texts. Conventions for taking running records and the reliability and validity of the coding system were established for this study (Clay, 1985).

The study used a repeated-measures design. A between subjects variable of status (learning disabled or not learning disabled) and a within subjects variable of testing level (entry and exit testing) were used. Both groups were assessed on passages of equal difficulty at pre- and posttest occasions.

At the beginning, learning disabled students were more likely to attend to visual information than were members of the unlabeled group. The at-risk group were more likely to use multiple sources of information. As the Reading Recovery program was implemented for both groups, the differences decreased. Results of the study revealed no significant differences between groups on any dependent measure at the exit levels. Lyons argued that when learning disabled students were placed in an intensive tutorial program, a high proportion (73.3%) were reading at the average levels of their classmates after an average of 13 weeks of assistance.

The Davidson County School system has special education services in each of its schools. In order to be served by the program, the student must be identified as performing below expected achievement levels for a student with their specific IQ. To determine this status, an intensive and expensive battery of tests is utilized. These tests are performed by the district's full-time school psychologists. These programs serve

identified students through both in-class and pull-out systems depending on specific identified needs of the child. A plethora of instructional strategies centered on isolated skills are used to help meet the needs of these children.. Also, students generally continue in the program once they are identified.

Retention

The major reason students are retained in first grade is poor reading skills (Shepard & Smith, 1989). Thus, it stands to reason that if failing first graders were taught to read, the number of students retained in first grade would decrease. Retentions or provisions of extra-year programs for kindergartners or first-graders add one year's cost per child--about $5,000 in round numbers (Slavin et al., 1994a). The number of children retained in kindergarten is considerable. Meisels (in press) reports that in 1989, North Carolina retained 8.6 percent of their students. Davidson County Schools retained 101 first graders in 1994-1995. This accounted for 7% of the first grade population in the district.

Using a nationally estimated six percent annual rate of pupil retention in grade and a $4,000 per year estimated annual per pupil educational cost, Shepard and Smith (1989) calculated a $10 billion expense for retention. Davidson County (101 retentions at $4,032.11 per child) spent $407,243.11 on first grade retentions in 1994-1995. Perhaps the monetary costs would be a small price to pay if the results of retention were positive

in regard to academic achievement and personal development (Norton, 1990). However, this is not the case.

Reynolds (1992) tested the effects of early grade retention in a longitudinal study of 1,530 lower-income minority children's first- and second-year reading and mathematics achievement, as well as their socio-emotional maturity. Because a major issue in retention research is the selection of appropriate control groups, a restrictive comparison group of 200 promoted children was also tested with the ITBS. The matched comparison group was selected to yield equivalent overall values on the explanatory variables, especially reading achievement, math achievement and teacher ratings prior to retention in Grade 1. A two-step hierarchical regression analysis was implemented.

Results of the study revealed approximately one-half of all retentions occurred in Grade 1 when children learn to read. Promoted children's growth in reading was significantly greater than that of retained children. Retained children, on average, gained about five months after the year of retention compared with seven months for promoted children. This pattern suggested that retention did not improve their school performance relative to promoted children. Another result of the study revealed that continuously promoted children, who were demographically similar and equally low scoring, scored eight months higher in reading achievement than any retained child.

When comparing the effects of retention across subgroup classifications, effects on academic success were significant and substantially negative. The difference in effect

magnitudes for reading achievement suggested that the longer the duration between retention and assessment, the greater the effect. The effect of retention on reading achievement worsened over time. This study on retention systematically refutes the notion that repeating a grade has its advantages.

Holmes and Matthews (1984) also found that grade retention has been shown to have no significant, positive effect on long- or short-term academic performance. Using a meta-analysis to combine primary research, a total of 11,132 students from 44 investigations were utilized. There were 4,208 nonpromoted students with 6,924 regularly promoted students serving as controls. When judging effect on academic performance, the following subsets were used: language arts, reading, mathematics, work study skills, social studies, and grade point average. The researchers found that retained students performed 0.44 standard deviations below promoted counterparts on the various measures of academic performance.

Probably no other single educational practice can match retention with such a consistently demonstrated negative impact on students. However, many educators still believe that grade retention is an effective solution for problems of poor academic performance and social immaturity. This sentiment has been repeated often by faculties of Davidson County schools. The final effect of this sentiment was a seven percent first grade retention rate in 1994-1995. This was higher than the national average of six percent.

Summary

Presently, students who have difficulty reading are referred to special programs. Students who do not read in the early grades often end up in remedial programs (i.e. Chapter 1) or special education; many are retained in grade. Remediation, special education, and retention are all very expensive approaches.

These approaches to reading failure do not assist students in functioning at the same level as children who are not having difficulties. Typically, in traditional programs, poor readers get fewer chances to read text and are led to focus only on basic reading skills without regard to the meaning in text. Reading is removed from its authentic use, and the focus becomes skills and drills (Allington, 1983). These types of instruction may contribute to dependence and passivity on the part of the poor reader (Pinnell, 1989). There is also the tendency of traditional approaches not to set deadlines for helping at-risk students catch up with their peers (Clay, 1985; Allington & Walmsley, 1995; Slavin et al., 1994b). The disadvantaged are labeled slow learners, and expectations are decreased permanently.

Schools can not truly be effective unless these at-risk students are given the skills to become successful students. The schools, therefore, need an effective approach to reach these at-risk children. In fact, there is a growing attitude that reading failure in the early grades is fundamentally preventable (Slavin, et al., 1994a; Allington & Walmsley, 1995; Dyer, 1992; Hiebert & Taylor, 1994; Pinnell, 1989; Taylor, Strait & Medo, 1994).

With the sense that traditional approaches are not meeting the needs of at-risk readers, it would seem more appropriate to have in place a new preventive, temporary, intensive intervention program with the goal of assisting at-risk readers in performing at levels similar to the average of their class.

Continuing to identify and place children who are having difficulty learning to read in traditional instructional support programs is not the answer to helping students learn to read. Research has shown that these programs have, at best, been marginal in their effectiveness at assisting at-risk students in learning to read. Our schools are becoming breeding grounds for failure. This failure is a result of schools' ineffectiveness at meeting the needs of all students.

The Characteristics of Effective Early Reading Intervention Programs

In recent years, there has been an effort to develop effective reading intervention programs for children in kindergarten, first, and second grades. These early intervention programs focus on authentic reading and writing experiences in order to accelerate the literacy learning of children who enter school behind their peers in emergent reading abilities (Slavin & Madden, 1989; Stanovich, 1986). There is good evidence that programs can be virtually designed to assure that all children acquire literacy with their peers (Slavin, Madden, Karweit, Livemon & Dolan, 1990; Pinnell, 1989; Clay, 1985: &

Walmsley & Walp, 1990). After reviewing the literature several components of effective programs were found. Each component will be addressed separately.

Early Intervention

Carter's (1984) study suggests that the gap between poor achieving students and their peers widens over time. Logically, it follows that it would be easiest to prevent reading difficulties rather than wait until a gaping chasm opens. Several reading theorists have voiced this same opinion (Slavin & Madden, 1989; Clay, 1985; Hiebert & Taylor, 1994; Juel, 1988; Morris, 1992; Allington & Walmsley, 1995).

The results of Juel's (1988) study indicated that reading level at the end of first grade is generally maintained for many years. In most schools, it is customary to try to assist students having difficulty reading. It must be assumed that any attempt to assist these low achieving students after first grade was ineffective. Juel's longitudinal study can be viewed as an avocation of early intervention.

From a theoretical standpoint, earlier interventions are better for the child. Clay (1991) speaks of the concept of accelerated learning. The goal is to catch the child up to his peers. In order to reduce the deficit between the child and the school norm, the intervention must begin early (Morris, 1992). By keeping the student with his peers instead of pulling the child out for special services, the social effects are minimized

(Allington & Walmsley, 1995). Interventions must begin early to afford effectively the opportunity of keeping the child with the class (Slavin et al., 1994b; Allington, 1983).

Phonemic Awareness

Insensitivity to the sounds of speech and difficulties in relating them to letters and spellings are claimed to be the single most frequent hole in the reading abilities of disabled readers (Levy, 1977; Stanovich, 1986). These claims would make phonemic awareness a vital a component of learning to read (Morris, 1992). Phonemic awareness is not natural. Rather, the ease with which people achieve phonological knowledge appears to be determined, in part, by environment (Adams, 1994) . Morris (1992) has suggested that with proper tutelage, students can improve their phonemic awareness and thus be better able to learn to read.

Mann (1993) studied the correlation between phonemic awareness and future reading ability. At the beginning of first grade, she tested 100 kindergarten children with phonemic awareness tests and visual-motor ability tests. At the end of first grade, she tested the children again using the Woodcock Reading Mastery Test. Correlations between the phonemic awareness tests and the Woodcock ranged from a 0.53 (for the Phoneme Segmentation Test to the word attack subtest on the Woodcock) to a 0.68 (between the Phonological Scoring System test and the word identification subtest on the Woodcock). Phonemic test correlations were much higher than any correlation based on

visual-motor tests. The evidence suggests that phonemic awareness can account for 30% to 40% of the variance between students' reading abilities (as demonstrated by standardized achievement testing) at the end of first grade. This finding clearly reveals that phonemic awareness is a critical issue in the acquisition of reading ability.

Griffith, Klesius, and Kromrey (1992) examined the effects of using basal reading strategies compared to a whole language approach. They correlated the effects of these treatments to students' phonemic awareness. First graders were pretested using the GKR phonemic awareness test, a spelling test, a writing fluency test and the CTBS. These children were again tested at the end of first grade to determine differences in reading skills and abilities. The whole language group scored better on the spelling test than did the basal group. Most significantly, the variance between scores on all other measures was not accounted for by the type of instruction used. The single factor that did account for these scores was the pretest phonemic awareness levels. Children who scored high on the phonemic awareness test consistently scored better on the measures than children who scored low on the test. Most assuredly, levels of phonemic awareness are a strong factor in children's ability to acquire reading ability. Regardless of the method used to instruct reading, the study showed the student's level of phonemic awareness to be the determining factor in his ability to learn to read. Logically, the question arises, "Is it possible to train students in phonemic awareness?"

Hatcher, Hulme, and Ellis (1994) studied different methods for enhancing reading instruction early in school careers. This study was performed in England on six and seven year olds (the age of American first graders). Groups were matched by WISC-R scores for treatment with either reading skills training, phonology training or both. Students received 30 minute training sessions twice a week for 20 weeks. The phonology alone treatment involved no reading practice. This practice involved, the identification of rhyming words, the identification and manipulation of syllables, the identification and discrimination of sounds within words, the segmentation of words, and the identification of words within sentences. The reading with phonology group received instruction modeled around the work of Clay's Reading Recovery model, but included the phonology training described above. The reading alone group received instruction modeled around Clay's Reading Recovery model with no explicit phonology training.

At the end of the study, several tests were used to assess reading ability. Among these tests were an early word recognition test, the Neil Analysis of Reading Ability (an informal reading assessment much like Clay's running records), a spelling test, and numerous reading tests not commonly used in this country. The phonology training with reading skills group scored better on all measures than any other treatment. The second highest scoring treatment was phonology alone treatment. Using an analysis of covariance, it was determined that only the phonology training group made significant increases on phonology measures. The reading with phonology group was the only group

to make significant improvements in reading ability This study indicates that it is possible to train students in phonemic awareness. Additionally, the training of phonology can have major impact on students' reading abilities, especially when integrated with other reading skills.

Research has demonstrated that phonemic awareness is a very important ability. There is substantial evidence that phonemic awareness is strongly related to success in spelling acquisition. Ball and Blachman (1991) found that kindergartners who received phonemic awareness training significantly outperformed a control group and a language activities group on the Phoneme Segmentation Test and word identification subtest of the Woodcock. These students were pretested on the Woodcock to assure equal pre-treatment achievement levels. Students receiving phonemic awareness training participated in groups of five, for 20 minutes four times a week for seven weeks. The activities included segmentation practice, letter naming, letter sounding, and DISTAR spell by sounds activities. The phonemic awareness trained students scored significantly better on all measures than the control group. The difference in scores was most pronounced on the word identification measure. This would indicate that phonemic awareness can help students recognize words.

From researcher's statements and the studies presented, it can be stated that phonemic awareness is a critical issue in students' ability to acquire reading skills. Any factor with this much impact in students' ability to learn to read needs to be consider in

an effective reading intervention. The studies also show that it is possible to improve students' phonemic awareness and thus their ability to learn to read. Hatcher, Hulme, & Ellis (1994) showed that reading interventions using phonemic awareness training resulted in greater improvement in reading abilities than similar interventions lacking this component. When looking for an effective intervention, phonemic awareness skills need to be addressed.

Word Recognition

Studies show that word recognition is integral to the reading process. By looking at the eye movements of skilled readers, the integralness of word recognition can be observed. The eyes of these readers detect and respond to even the slightest misprint tucked inside a long word. Their eyes flick back to the misprint to re-evaluate the stimulus they received. This finding indicates that one difference between skilled readers and poor readers is word recognition on the unconscious level of eye movement (McConkie & Zola, 1981). Since the goal of effective reading intervention programs is to produce skillful readers, the program must help students behave as skillful readers do. A portion of this behavior is the automaticity in word recognition. This automaticity can free readers from the conscious burden of decoding so they may focus on construction of meaning (Vellutino, 1991).

Lomax (1984) produced a conceptual framework for effective intervention components. This framework was developed by using computer modeling after data collection on both students labeled learning disabled and non-labeled students. His study empirically evaluated a causal model which detailed the development of processes underlying reading acquisition and determined whether the proposed model fitted equally well for good and poor readers. This model consisted of decoding, word knowledge (recognition of sight words), reading rate, and comprehension components.

The sample was composed of 101 learning disabled readers ranging in age from 6 to 11 years in a large urban school district. The primary reason these elementary children were diagnosed as LD was their relatively poor performance on assessments of reading and language development. The sample of normal readers consisted of 104 children ranging in age from six to 11 years, who were students in a large urban school district. Data were gathered from various subscales for the Diagnostic Reading Scales (DRS) and the Wide Range Achievement Test (WRAT).

A matrix of the indicator variables was generated for each sample. The LISREL V computer program was used to test the proposed model for the acquisition of reading skills. The LISREL V package arrived at a best fit model after assessing both theoretical implications and statistical information. Results of computer analysis revealed the same model fits best for both learning disabled students and non-disabled students (chi-square

test of goodness of fit for 59 degrees of freedom was 108.37 and 149.52 respectively, for the normal and disabled readers).

The model discerned that (a) word knowledge skills depend upon the development of decoding skills; (b) text processing speed relies upon word knowledge skills; (c) comprehension depends upon word knowledge skills. Therefore, proficiency in the decoding skills is important for an ability to recognize words. As readers become adept at recognizing words automatically, comprehension of text become more likely. This supports the role of phonemic awareness in beginning reading programs. Also, the production of a large and automatic word recognition repertoire is of paramount importance in early reading instruction.

Vellutino (1991) reviewed research to provide a theoretical basis for the debate between whole language and code based instruction. From his review he concluded that a balanced approach was the most appropriate method of teaching reading. Many of the issues he found as an important arguments for code based instruction speak to the need for word recognition in instruction. He theorized from the findings reviewed that an adequate fluency in word recognition is necessary for comprehension to take place. He also theorized that poor readers must rely more on context than proficient readers due to a lack of fluency in word recognition. This becomes a crucial issue for effective reading intervention programs since poor readers are the clientele in these programs. The implication is that students with a lack of word recognition ability will need to focus on

correcting their deficit instead of spending effort on higher order skills such as relating meaning to their daily lives. His theory also speaks to the need for poor readers to have texts that are predictable enough for them to use contextual clues in bolstering their decoding skills.

Juel (1983) stated for purposes of facilitating word recognition, it is the familiarity with patterns that occur in a large variety of words that is most helpful. This familiarity is linked to phoneme awareness. Thus, research indicates phonemic awareness can improve word recognition. Deep and ready working knowledge of letters, spelling patterns and words, and the phonological translations of all three are of inescapable importance to both skillful reading and its acquisition, not because they encompass all of the reading process, but because they enable it (Vellutino, 1991). For this reason, an effective reading intervention program must include word recognition training to empower the student to read with more fluency.

Reading Practice

The basis for this program component is more theoretical in origin than research based. After a discourse of the theoretical foundations, a discussion of the study which tests the theory is presented.

In human activities that require high levels of proficiency, a considerable amount of time must be spent in practicing the skills leading to mastery. It is believed that only

by spending a great deal of time reading will students develop beyond the level of mere accuracy. Practice may be one important subskill in reading, but it must also include time spent on reading easy, interesting, and meaningful material. In order to insure automaticity, practice is necessary (Adams, 1994; Samuels, 1994).

If texts are difficult in wording or structure or unfamiliar in concept, they require the active attention of the reader. However, the more one must direct attention to the local decoding difficulties of reading, the less attention one has available to support the larger understanding. When the ability to recognize print is rapid, effortless and automatic, the reader has available the cognitive energy and resources on which true comprehension depends. Only then can the reader have the perspective and capacity to reflect on the text (Samuels, 1994).

For students whose attention is on decoding rather than comprehension, one solution is to provide texts that are easier to read. Another solution is to suggest that they read the text several times until the meaning becomes clear. An appropriate level for a text is the level at which the reader is challenged but not overwhelmed (Morris, Shaw & Perney, 1990). This is termed the instructional level. It is the level at which the learner can profit from instruction. Researchers have stated that students reading materials with an error rate of more than 5% are more off task than readers working at a smaller error rate (Gambrell, Wilson, & Gantt, 1981). A study was performed that elucidated the effects of repeated reading on student oral reading fluency.

Koskinen and Blum (1984) examined the effectiveness of repeated reading as a classroom strategy for use with 32 below average third grade readers in six public schools. Students were individually pre- and posttested on the Diagnostic Reading Scales (DRS). Students whose oral and silent reading levels were below average were included in the study. Teachers and their intact group of students were randomly assigned to one of two treatment conditions: repeated reading or study activities. Teachers received training on the use of repeated reading. Next, they taught the children to use repeated reading to self assess reading fluency. The sessions included supervised practice of repeated reading of the students' basal reader in pairs. Students monitored and evaluated their own and their partner's work. An analysis of covariance was conducted on the oral reading fluency posttest using the DRS. The covariate was the oral reading fluency pretest score on the DRS. There were statistically significant differences in favor of the repeated reading treatment group ($p < .05$). In addition, subjects in the repeated reading condition made significantly fewer semantic miscues ($p < .005$).

Results of the study indicated repeated reading was effective at improving fluency for below average readers and suggested that this strategy may assist in the development of comprehension skills. The students exposed to repeated reading showed fewer total miscues. More importantly, the lower number of semantic miscues indicated that students were comprehending the text better. They used context to assist in their decoding. These findings give strength to the theoretical argument for repeated readings.

Predictable Books

Vellutino (1991) in reviewing methods stated that books need to be predictable to empower poor readers to use contextual cues in decoding unfamiliar words. From the discussion of repeated reading, reading materials should be at instructional level for the students being served. These materials need to be authentic, meaningful whole texts. Such materials are often found in whole language instructional programs. Such materials provide students with meaningful experiences in reading. This is a contrast to traditional isolated skills instruction. When defining her Reading Recovery program, Clay (1984) insists on the use of predictable books. Her approach is to provide students with meaningful reading experiences where the student can attain success. These two researchers are not the only ones to point out the importance of using these books with poor readers.

Chandler and Baghban (1980) investigated if the use of predictable books would affect the reading scores more favorably than students exposed to basal reading. Nineteen first-grade students, 14 second-grade students, and 15 third-grade students who qualified for ECIA-I services in a small rural school participated in the study. Students were randomly selected across grade levels for the experimental and control groups. Beginning in September of the school year, the groups of students were taken daily from the regular classroom and placed in a Reading/Language Arts Laboratory situation for a 45 minute period as a supplement to their regular reading class.

The instructional materials used by the control group were based on a developmental, sequential basal skills approach. The students in the experimental group were allowed to browse and read any predictable book. The method of introducing books to each child was based on a modified version of Stauffer's Directed Reading-Thinking Activities. A two-way analysis of covariance was performed on the Metropolitan Readiness Test posttest reading scale score with pretest reading scale score used as the covariate.

The students using the predictable books as a supplement improved significantly over the students who used only the basal reader ($p < .0003$). The results support a whole language approach to reading using predictable books as a sound process which provides whole units of meaning for the reader and makes the natural prediction of reading easier. For these students, the use of predictable books aided in their acquisition of reading ability. An effective intervention program should use materials and methods that assist students in acquiring reading ability. The use of predictable books is one means to assist students. When choosing materials for an effective reading intervention, predictable books can be shown to have a positive effect.

Parental involvement

Parental involvement can be the turning point in a program. This involvement assures that learning continues after the school day has ended (White, Taylor & Moss,

1992). Home environment and support are important factors in the success of schooling (Dave, 1963; Wolf, 1964 & 1966; Marjoribanks, 1974; Kalinowski & Sloan, 1981). This support can provide additional reading practice outside of school. Home support can also provide necessary encouragement for the child to achieve (Bloom, 1984).

Reynolds (1991) used the LISREL-V computer package to elucidate the correlations between many schooling factors and school achievement (particularly reading). One factor used in the study was parental involvement. For his study he collected data on 1,539 at-risk kindergarten students to provide a longitudinal study. Scores were recorded on the ITBS during the fall of 1985 when the students were in kindergarten programs. Scores were taken at the end of each grade through 1988. From the data analysis, ITBS reading scores at the end of first grade were correlated to parent involvement with a 0.397 coefficient. This correlation dropped to a 0.371 for second grade scores. Although these correlations are not high, they are significant for the sample size used. They do account for 14% of the variance of student reading achievement.

Reynolds pointed out the reality factor involved with this finding. Parent involvement alone can not sustain reading achievement scores. However, this involvement does make a difference in student achievement. These data tied to the theoretical basis previously stated suggest that a reading intervention will be more effective if it uses parental involvement.

Diagnostic Assessment

An important starting point for an early reading intervention program is a diagnostic assessment that clearly alerts school officials to early reading at-risk behaviors (Morris, 1992). The diagnostic assessment should measure aspects of emergent literacy behaviors related to reading success. The data from such instruments provide teachers with reliable information for grouping students, planning instruction, and reporting children's progress to parents and administrators.

Hurford, Schauf, Bunce, Blaich, and Moore (1994) looked at the development of reading skills in 171 students over time. Data was collected on these students early in first grade. Data sets included phonemic awareness data, word recognition data, and the Peabody Picture Vocabulary Test-Revised (PPVT-R). Data was again collected on these students at the end of the second grade. Students were labeled based on their second grade scores as follows: non-disabled, reading disabled, or garden variety (low reading scores but intelligence scores too low to be reading disabled). The groupings were then statistically tested to discern indicators of second grade reading group membership. The data suggested that group membership could be predicted using a linear discriminate analysis with an accuracy of 98.25%. This indicates the ability to detect possible at-risk reading behaviors at the beginning of first grade using a diagnostic assessment process.

Several measures should be included in an early reading diagnostic test for reading difficulties. Two measures that are frequently considered good predictors of first-grade

reading ability are children's abilities to name upper- and lower-case letters (alphabet knowledge) and phonemic awareness (Juel ,1988). McConkie and Zola (1981) also asserted that the ability to track print is an important prerequisite to learning to read. Morris (1992) proposed and produced the Early Reading Screening Instrument (ERSI). This instrument identifies children who may have difficulty learning to read. His instrument includes sections to determine students' abilities in the areas of phonemic awareness, letter recognition, and the ability to tracking print. In addition to formal instruments, teacher input is important in determining both the method and timing of reading interventions (Morris, 1992).

Another important factor when discussing diagnostic assessments is whether to use standardized tests or informal assessments. Harlin and Lipa (1990) examined a number of literacy measures in light of their task demands and their contribution to a composite picture of a child's literacy development. The major focus was on comparing the effectiveness of informal and standardized readiness measures in assessing the literacy development of both normal first graders and at-risk primary grade children. The study utilized four classes of first grade students and three classes of at-risk students. Using multiple regression analyses, the best predictors of first graders' reading achievement for both groups of students were the informal literacy measures (Writing Vocabulary Test, Concepts About Print Test, Sentence Dictation Test) rather than a formal readiness test battery (Metropolitan Readiness Test). The researchers concluded that informal

measures provide a description of the strategies children are using to respond to those items which better assesses emergent behaviors and are more suitable indices for intervention needs.

From the research it can be seen that there exists the ability to predict accurately a student acquisition of reading abilities. The measures most readily available are the informal assessments. Particularly, Morris's ERSI (1992) shows promise based on content. No matter which measure is used, it is important to determine which students are at-risk for reading failure so that they may be placed into an intervention in a timely fashion. This is most important when not every student in a school system will receive the intervention.

Administrative perspective

Administratively, the program must produce a change in the students. A primary indicator of effectiveness would be for the program to raise the students to the performance of their peers (Allington, 1995). Many methods for ascertaining the level of a student's skills are available. There is no clear consensus as to a single appropriate indicator. In addition to standardized testing, Clay (1979, 1985) has suggested the use of running records as a valid means of assessing reading levels. In defining his ERSI, Morris (1992) uses subtests consisting of the following: phonemic awareness, letter recognition, word recognition, and print tracking ability. This test can be used to assess students'

reading abilities. All of these instruments can give reading achievement information about students. An administrator can use these instruments in gauging program effectiveness. Certainly, an administrator wants students to perform not only on tests, but also in the classroom. They want at-risk students to be as successful in classrooms as their peers.

Unfortunately, a program may not raise its students to the same level as their peers. When this is the case, an alternative definition of success must be used. A time-honored indicator of effectiveness would be the corresponding effectiveness to existing traditional reading programs. This type of comparison validates the use of an intervention program in place of an existing intervention (King, 1994). This can be particularly helpful when cost of a program becomes an issue.

A frank description of an effective program is one that causes children to make continued progress in reading. This is the actual result desired from an intervention program. Unfortunately, cost is an issue with any program implemented. The cost must be within a range deemed reasonable for the reading intervention (Dyer, 1992).

Tutorial Method

One-on-one tutorials are the most effective early means of teaching (Bloom, 1984). Slavin, et al., (1994a) state that tutorials are also the most effective means of reading intervention. Individual instruction instructional emphasis and teacher professional development are all factors in the success of tutorial programs (Bloom,

1984). As stated previously, children who have fallen behind will never catch up with their age peers if they make normal progress. They must make accelerated progress to close the gap. Further, children are not likely to make accelerated progress with the same amount of instruction as children who are not having difficulty (Allington, 1983). Tutorials generally provide the additional instruction needed. These tutorial intervention programs revolve around the theme of keeping the children with their classmates. The intervention supplements classroom instruction instead of replacing it.

Current Reading Tutorial Programs

In addition to traditional responses to reading difficulty a number of new approaches have been implemented in many areas. Among the most widely respected is the Reading Recovery program. This section reviews Reading Recovery and ICARE in a qualitative view. Attention is paid to correlation to previously stated characteristics of effective reading intervention programs. The Reading Recovery Program was reviewed due to its correlation to Davidson County's ICARE program.

Reading Recovery

Reading Recovery is a popular tutorial reading program used to accelerate the progress with at-risk children. This program was designed reduce the number of children having reading and writing difficulties. The program focuses on six-year-old children who,

after one year in school, are identified as failing to make good progress (usually the bottom 10% to 20% of beginning readers in any given school). The children are assessed with a battery of tests and observational procedures constituting the Diagnostic Survey (Clay, 1985). The children selected for assistance are provided with 30 to 40 minutes of one-on-one tutoring per day by a specially trained Reading Recovery teacher. The aim of the instruction, which supplements the children's regular classroom literacy program, is to help children achieve a reasonable degree of independence in reading and to reach a level of reading performance that is at or above the class average, in as little time as possible. When a student shows evidence of an independent system for reading and can read material typical for his class, the program is discontinued, making room for another student (Clay, 1985). This process usually takes between 12 and 20 weeks. Two studies (Clay, 1985; Pinnell, Deford, & Lyons, 1988) suggested it has long term effects.

Reading Recovery is based on the assumption that people learn by constructing meaning through social interactions. Supportive social contexts are consistently built for learners at every level-- children learning to read, teachers learning to teach, and system designers learning to adapt to innovation. Learners engaged in social activities that support their learning, and they gradually take over the process, becoming independent literacy learners (Clay, 1985).

Reading Recovery is designed to provide the social interaction that supports the child's ability to work at a level at which she may be "half-right" not having full control,

but able with the support of the adult to problem solve and perform. Vygotsky calls this the "zone of proximal development" and within this zone of operations, interaction with the adult is critical. Working just beyond the child's actual development builds a system that leads to further learning. This theory of instruction differs from Piagetian view of cognitive development that suggests development must take place before learning.

Reading Recovery students read many small books written in a style close to oral language, Many books have predictable language patterns that support children's reading even when they do not fully control the process. Children read and write their own sentences. Teachers use magnetic letters to assist children in gaining flexibility in analyzing words. Sound-symbol relationships are addressed within the context of extended reading and writing. The framework includes interaction between expert and novice in the following sequence:

1. Familiar rereading of easy texts;
2. Independent reading of an instructional level text;
3. Optional component to develop letter knowledge;
4. Composing and writing a sentence;
5. Reconstructing a cut up version of the sentence;
6. Talking about and then reading a new more challenging text (Tancock, 1994).

A basic notion in Reading Recovery is that children can learn at an accelerated rate and catch up with their peers. Acceleration is a result of the emphasis on strategies; using what children know to get what they do not yet know. Reading Recovery provides opportunities for ongoing conversation with the student and teacher engaged in authentic

reading and writing tasks. The learner uses resources to search, check, detect errors, and solve problems. He uses his prior knowledge and text redundancy.

The teacher uses sets of prescribed instructional materials, but there is no predetermined sequence for learning skills. For the first 10 days the teacher engages children in reading and writing but primarily her interest is in "roaming around the known" and making hypotheses about where the child's reading strengths are (Clay, 1985).

Reading Recovery was pilot tested in six Ohio urban schools (n=55) (Pinnell, 1989). The average number of lessons given to Reading Recovery children was 60.7, the equivalent of 12 weeks. The comparison group received normal instruction. In October and May, subjects were assessed on (1) letter identification, (2) word test, (3) concepts about print, (4) writing vocabulary, (5) dictation, (6) text readings, (7) a writing sample, and (8) two subtests of the CTBS. In May, a multivariate analysis indicated significant differences between Reading Recovery children from the control group. The univariate t-tests revealed that Reading Recovery children performed significantly better (p .05) than comparison children on all measures. On the Stanford Achievement Test (SAT)(Form V), Reading Recovery students scored at 35.99 percentile, while the comparison group scored at 25.89 percentile. Children retained their gains and continued to make progress at least two years after the intervention (Pinnell, 1989).

Another study compared Reading Recovery with four other models and a control groups to determine if Reading Recovery was as effective as a small group setting, a skills

approach, or with teachers not trained as extensively (Pinnell, Lyons, Deford, Bryk, & Seltzer, 1994). The study included 403 students from two rural, two suburban, and six urban school districts. All first graders in the sampled school who scored below criterion for Chapter 1 on district administered standardized tests (usually 37 percentile) and whose teachers recommended them for compensatory help were eligible. Lowest scoring students were given highest priority for service. One treatment group followed the Reading Recovery (RR) model. Another treatment group was comprised of the Reading Success (RS) model. This model had a similar instructional framework to Reading Recovery, but the difference was RS had a abbreviated teacher training. Reading Success was also an individual program and was based on the development of independent reading strategies and used Reading Recovery materials. Children received daily 30 minute lessons.

The third treatment group was based on the Direct Instruction Skills Plan (DISP). This model was a one-on-one tutorial with varying activities and instructional emphases on vocabulary development, word recognition, and literal, inferential, and evaluative comprehension. Guidelines stressed mastery, teaching skills in a logical and sequential manner, application of skills in context, careful documentation, and a positive approach. For each child, tutorial sessions were linked to the classroom instruction the child was receiving. Each teacher administered a skills survey that included tasks measuring sight vocabulary, word analysis skills, comprehension, language development, and study skills.

Teachers used this assessment and a skills inventory prescribed by the school's particular basal reading system to plan tutoring sessions. Lessons included work on letters and sounds, on words, and on text-level strategies such as sequencing, filling in the blanks, and answering questions, as well as reading extended texts. DISP teachers were free to design lessons that included any kind of exercise or material in addition to reading and writing. Typically, lessons focused on learning words or developing knowledge of letter-sound correspondence. Students also read books, and teachers frequently read aloud to students. Teachers received three days of intensive in-service.

The fourth treatment group was composed of the Reading and Writing Group (RWG) model. In this model trained Reading Recovery teachers worked with a small-group tutorial program. The goals of instruction for this group were the same as for RR: instruction focused on the development of strategic processes. Teachers used RR materials. Reading little books was a typical activity; children read books independently but also participated in group reading with each child having a copy of the same text.

The comparison group for each treatment consisted of the existing Chapter 1 service for first graders in the schools where that treatment was applied. Teachers received no additional in-service and were instructed to follow their usual procedures. (Pinnell, et al., 1994).

Results of the Hierarchical linear model analyses effect sizes revealed only RR produced significant effects on all four measures at the end of the treatment period (Text

reading level, Dictation task 2, Gates-MacGinitie 1, and Woodcock-R). The results indicated that one-on-one tutoring alone was not sufficient since RS and DISP yielded consistently lower outcomes than RR. RR teachers had better results than RWG so that individual tutorial setting was necessary, but not sufficient to achieve the results of RR. RWG was the second best treatment indicating the potential impact of RR training on teachers' general approaches to their work in classrooms (Pinnell, Lyons, Deford, Bryk, & Seltzer, 1994). A macroanalysis of videotaped lessons revealed that essential program components related to success were one-on-one lessons, the lesson framework, and the Reading Recovery teacher staff development model.

Iversen and Tunmer (1993) investigated whether the Reading Recovery program would be more effective if systematic instruction in letter-phoneme patterns were incorporated into the program. First-grade at-risk readers were divided into three matched groups of 32 children each: a modified Reading Recovery group, a standard Reading Recovery group, and a standard intervention group. The children in the modified Reading Recovery group received explicit code instruction involving phonograms. ANOVA procedures were applied to pre- and posttest data of student performance on various subtests of the Diagnostic Survey, a test of Dolch word recognition, and tests of phoneme segmentation, deletion and recoding. Results indicated that although both Reading Recovery groups achieved levels of reading performance required for discontinuation of

the program, the modified Reading Recovery group reached these levels of performance much more quickly.

Results of the Reading Recovery program suggest that it is an effective reading intervention for at-risk first-graders. Building on the program description effective components of Reading Recovery include the following: early diagnostic assessment, one-on-one tutoring, re-reading of predictable books, and word recognition. Studies also show that the program could be more effective if it were to include a stronger phonological component (Iversen & Tumner, 1993; Hatcher, Hulme, & Ellis, 1994).

The ICARE Program

Background

Davidson County Schools in 1987 realized that many of the district's first graders were not learning the skills necessary to become proficient readers. Implementation of the Reading Recovery program was considered, but the cost was prohibitive. The administrative staff designed a program to intervene before first graders failed. This program utilized methods from Reading Recovery. Funding for the ICARE program was a joint effort for the system. Chapter 1 funds, local monies, and a grant made it possible to hire ICARE teachers.

Based on Reading Recovery, ICARE was implemented in nine of 13 elementary schools in August, 1993. ICARE is an in-class one-on-one tutorial that initially

employed 13 certified teachers who worked daily from eight to noon and individually served four students daily for 30 minutes for one semester. The ICARE program has subsequently increased to 21 teachers and served all 13 elementary schools in Davidson County.

Method

Students were served within the classroom following a different approach from Reading Recovery.. In Reading Recovery students worked with reading teachers outside the classroom. Working within the classroom allowed the ICARE teacher and the classroom teacher to communicate frequently on student progress. This arrangement allowed for flexibility in rotating students if interruptions or special events occurred. The classroom teacher learned how to intervene and prompt students in a supportive manner to provide consistency in instruction from the ICARE teacher. This approach eliminated confusion for students and reinforced good reading behaviors. Most importantly, it allowed for students to remain in the comfortable surroundings of the classroom and decreased the time lost to instruction by student shuffling.

Instruction in the ICARE program was aimed at developing capable readers--readers who were independent, flexible, strategic, motivated, and fluent. ICARE was intended to be a temporary program. When a student showed evidence of an independent

system for reading and was able to read material typical for her class, the program was discontinued, making room for another student.

The ICARE program permits teachers to adapt flexibly their instructional practices to students' needs and interests. The ICARE teachers' instruction gives at-risk students more literacy experiences rather than trying to backfill a deficiency. Thus, reading was accelerated, not remediated. Reading was in a one-to-one setting, and the teacher was viewed as expert and the student as novice. At first, the ICARE teacher discerned the student's zone of proximal development. Clay (1985) described this initial period as "roaming around the known."

Therefore, depending on where the student was, the ICARE teacher began with concepts of print or moved directly to the reading of small books. The student may need beginning instruction which included such things as reading the words, not pictures, in a book; arranging words from left to right, top to bottom; and making sounds of words. The ICARE teacher incorporates activities such as echo reading or a structured sentence imitation task to develop these skills (Morris, 1992).

As the student became more advanced, instruction in phonemic awareness was fostered. The ICARE teacher followed a whole language approach where children learn the decoding strategies of contextual and phonetic analysis as they read and reread simple stories. The fundamental belief of this reading approach is that children learn to read, for

the most part, by practicing reading, not by completing worksheets on reading skills performed in isolation (Allington & Walmsley, 1995).

A major goal of instruction was to help students become strategic readers and prevent bad habits. Bad habits would include relying heavily on the graphophonic cueing system, lacking fluency in reading, viewing of reading as accurate word recognition versus meaning construction, developing few writing strategies, and acquiring sparse self-monitoring and self-correcting behavior. As students moved to the daily reading of small books based on their interests and level of present performance, ICARE teachers helped students understand the purposes of reading and activate relevant background knowledge.

At-risk students in ICARE were taught to become active readers who consciously used reading strategies when comprehension failure occurs. Children were taught a variety of strategies, such as reading ahead, looking at the pictures, and examining the letters. Furthermore, they are taught to cross check: to validate a guess by using more than one information source. Explanations were given so that a student knew what strategy to use, how to use the strategy, and when and why the strategy would be used. Such explanations were particularly helpful to at-risk students. An example activity would be Talk-Aloud, where ICARE teachers demonstrated the behavior as well as made verbal statements about how to approach the text. Questions might include: "Does it make sense?" "What do I know about this?" "What can I predict here?" The ICARE teacher models these strategies out loud, and the student was encouraged to do the same. Hence,

the ICARE teacher made invisible cognitive processes meaningful to students. As soon as possible, she shifted the reading strategies away from her to the student, making learning self-regulated, not merely done for compliance.

Reading materials included authentic literature from multicultural perspectives, real-life experiences, and a range of difficulty levels. The ICARE teacher reviewed instructional materials in light of his own understanding, created alternative materials in light of his own understanding, fitted the content to the general characteristics of his students, and tailored materials to individual student's characteristics. Therefore, reading materials varied but included an abundance of small books. Many books had predictable language patterns that supported children's reading even when they did not fully control the process (see Appendix A).

Procedures

A typical lesson from ICARE began with reading a familiar, previously read book to practice fluency and automaticity. Next, the student read a book that he had read the day before. The ICARE teacher provided assistance where needed and kept a running record. The ICARE teacher worked on building up the student's prior knowledge experiences so that the student was able to glean knowledge from the interaction of his knowledge base and information from the text. Talk was mostly student talk with the teacher asking open-ended questions which drove the student to a deeper understanding

or comprehension of the material. The ICARE teacher also encouraged students to ask questions. There was a discussion element where the student gave reasons for his comments or opinions about the text. The ICARE teacher supported a risk-taking environment where the student was allowed to explore and brainstorm and was encouraged to make mistakes and learn from them.

Included in the review of previously read books is what the program termed "word study." The basic format for this instruction was patterned around the work of Morris (1992). The teacher assisted the student in recognition of the letters that make up sounds. The instruction began with the consonants and progressed into vowel sounds and patterns of letters that produce syllables. This instruction increased the students' level of phonemic awareness by assisting the student in correlating sounds to written words.

The ICARE student wrote a sentence daily. In moving from the simple to the complex, students were required to pay attention to letter detail, letter order, and sound sequences. Children learned to hear the sounds in words they wanted to write, and they discovered ways, such as invented spelling, to write these sounds down.

The ICARE program recognized that informed, proficient teachers and reflective learners were the most important sources of information regarding students progress and achievement. The ICARE teacher assessed student progress by keeping a daily running record of the book the student read the previous day. In this type of assessment, the

teacher was constantly aware of the strengths and weaknesses in the child's reading. The ICARE teacher also videotaped students. The ICARE teacher and parents reviewed the tape to see how the student was improving. In an one-on-one tutoring situation, the ICARE teacher was constantly engaged in social interaction with the student and assessing his progress.

At the end of a lesson, a new book is introduced so the student has an opportunity to put into practice what he has learned. The book becomes tomorrow's running record. The ICARE student takes a book and a cut up sentence home, in order to provide practice and parent involvement.

Additional program components

The ICARE teacher supported student success through the regular reading curriculum, rather than setting different objectives. The reading tutorials occurred in the regular classroom. This practice facilitated interaction between the ICARE teachers and classroom teachers. As a team, these two teachers met at regular intervals to coordinate their approaches with individual children.

Parental involvement was essential to participation in the program. When a student was admitted to the program, his parents were contacted. The child could participate in the program only if his parents agreed to read with him for fifteen minutes

each night. This resulted in an extended reading time the child might not have otherwise had available.

Another essential component of ICARE was staff development. Intensive on-going staff development was in place for ICARE teachers. ICARE teachers needed time to reflect on their practices and work with other teachers to develop an overall philosophy of reading instruction. Just as students need to interact with their peers to construct meaning, so do teachers. ICARE teachers observed videos of other ICARE teachers and provided feedback on best practices and methods to improve teaching methods.

Summary in light of characteristics of effective programs

The characteristics of effective reading intervention programs, diagnostic assessment, early intervention, phonemic awareness, word recognition, re-reading of predictable books, parental involvement, tutorial method, and administrative concerns are addressed in the ICARE program. The program uses a modified form of the ERSI to diagnose students early in their school career. Teacher referrals are extremely important in the process of placing students into the program. The program is an early temporary intervention program. It occurs during the first semester of the first grade year. Emphasis is placed on phonemic awareness. Letter recognition is a component of the program if students need assistance in that area. Word recognition is addressed once

students have progressed past letter recognition difficulties. Each lesson is focused around the rereading of predictable books, thus fulfilling these criteria. Each student is admitted only with a pledge of parental support. The program is based on the tutorial method. From an administrative perspective, the program attempts to curb some of the costs associated with other programs and raise students to a level of performance with their peers.

The Administrative Review of Programs

A simple way to review administratively a program is to answer two questions about it. These questions include, "Does the program attain its goals?" and "Does the program fill the need it was designed to fill?" The program this study was designed to review administratively was Davidson County's ICARE program. The program's stated goal is to bring 80% of its participants up to grade level in reading. The program was designed to fill the need for an effective early reading intervention program at a reasonable cost. Administrative review based on the first question is self-evident. Calculating the percentage of participants reading at (the level set by the school district administration) grade level is facilitated through the use of running records (Taylor, et al., 1985). Administrative review based on the second question was a more difficult proposition.

One method of administratively reviewing the effectiveness of a program is to look qualitatively at the program components (Worthen & Sanders, 1987). Those

components were spelled out in the characteristics section earlier in this chapter. Although this sort of administrative review is useful in choosing a program to implement, from the view of an administrator looking at a program that has been in place for several years, further study is needed. This study needs to look at the long term outcomes of the program in order to justify its continued expense. Additional information on the cost must also be analyzed to make an appropriate administrative decision (Allington & Walmsley, 1995).

For the purposes of organization, reviewable measures will be presented in the categories of achievement and academic performance. Achievement indicators are those that give insight into the reading ability of the student. Academic performance indicators are those that give an indication of how well the student is performing in the regular classroom. Both sets of indicators need to be studied longitudinally (Lyons & Beaver, 1995).

Achievement can be measured in many forms. The ones most relevant to this study are presented here. These forms were chosen from the available data the district had collected on the ICARE students for use to test certain factors. The first measure of achievement is the running records section of the district reading assessment. This section, patterned after the Reading Recovery running records, measures the students' ability to handle text at a specific grade level (Clay, 1979, 1985). This is important information about the students' success in reading (Taylor, et al., 1985).

A second measure of achievement was the California Achievement Test (Form E). This test measures only parts of the total reading picture. It does provide insight into the child's reading ability and can help to confirm inferences made about the child's abilities (CTB/McGraw-Hill, 1986). The final measure is the district modified Early Reading Screening Instrument (ERSI) (Morris, 1992). This instrument evaluates phonemic awareness, alphabet knowledge, sight word recognition, and the ability to track print. All of these areas have been shown to be indicators of the students' ability to be successful in reading (Morris, 1992).

Academic performance indicators vary in form. Exceptional Children's referrals, retentions, and reading grades all are good indicators of how a child is fairing in school (Lloyd, 1978; Slavin, et al., 1994b; Allington et al., 1995; Smith & Shepard, 1987; Hopkins & Stanley, 1981). Slavin (1994b) stated if a third grader is reading well, keeping up with his class, and staying out of special education, he was succeeding, regardless of his IQ. If he was far behind in reading, failing his grade, or in a special education for learning disabilities, he was failing, no matter how high his IQ. These indices are useful in looking at how the student is performing in a view different from achievement scores.

Cost

A final issue is that of cost. Although no single figure can be given as to the dividing line between reasonable and unreasonable, data has been collected. When

considering alternatives designed to attain the same goals, then comparisons of the programs on the basis of average costs is useful. Average costs are computed by summing total program costs (above normal educational expenses) and dividing by the number of students served (Chambers and Hartman, 1981). The average student cost can be used for comparing programs (Popham, 1975). Once alternatives have been identified, it is possible to prepare cost estimates for comparison purposes. When using Chamber and Hartman's method, reduction in the cost of other educational programs should be subtracted from these cost estimates prior to comparisons. The administrator is in a position to contrast benefits with costs of the alternative under consideration. Each of the options will be most precisely depicted by considering the effects of each alternative as well as its cost. A basic assumption when comparing programs on the basis of cost is that the programs have similar effects (Popham, 1975). This data used as a basis for these comparisons is usually collected in the form of total program costs (Levin, 1987).

This information gives administrators valuable data for making decisions about the appropriateness of the program. This information, coupled with academic performance data, is powerful. Reductions in retentions and special education referrals have both immediate and long-term impacts on the costs of education for low achievers. Substantial savings in reduced retentions and special education have been shown for Reading Recovery (Dyer, 1992).

In the cost analysis there were several assumptions to facilitate the cost comparisons. First was the use of marginal cost. This involves the assumption that all three alternative continue to provide standard educational services; therefore, so costs of these services need not be considered. The study focuses on the additional or incremental services that are specified in each model to improve school effectiveness (King, 1994). The second assumption was that program costs reported by the school district accurately reflect total program costs.

Summary

Schools need effective reading intervention programs for at-risk students. These programs help schools to achieve their goal of educating all students. Administrators must be knowledgeable of and involved in reading interventions if they are to be successful (Jacobson et. al., 1992; Hyde & Moore, 1988; Anderson & Pellicer, 1990). Since administrators hold responsibility for all programs within their schools, they should undertake the review of reading interventions in terms of both effectiveness and cost.

Poor readers impact schools in terms of achievement scores, academic performance, and cost to the school. It is believed that through the use of an effective current intervention, these impacts can be avoided.

Students who score poorly on achievement tests in first grade will continue to do so in the third grade (Juel, 1988). Over the years, the deficit in at-risk readers'

achievement only widens from their cohorts if effective reading interventions are not employed (Carter, 1984). At-risk students academic success can be predicted as early as the third grade (Lloyd 1978). Reading grades, CAT scores, and retention are indicators of whether at-risk students will graduate from high school. Any response to at-risk readers involves some expense to the school. Nationally, the cost is staggering. By looking at both achievement test scores and academic success indicators, we can assess whether a reading intervention program is succeeding. The final determining factor for any program instituted will be the school's ability to pay for the program.

Traditional responses to reading difficulties have not shown promising results. Chapter 1, special education, and retention generally fail to return students to the classroom reading with the average level of their peers. These programs tend to be expensive, and outcomes are marginal at best.

From the literature reviewed, several components of effective reading intervention programs emerged. Certainly, the intervention should be early and temporary in nature. Phonemic awareness and word recognition appear to be critical prerequistes to comprehension. Reading practice, one-on-one tutoring, repeated reading of predictable books, and parental involvement are effective in aiding this endeavor. An early accurate reading diagnostic assessment is needed to determine which students are having difficulties and are in need of a reading intervention. Reading Recovery has proven to be an effective early reading intervention for first-grade students. Its effective components

include the following: early diagnostic assessment, one-on-one tutoring, re-reading of predictable books, and word recognition. Studies also show that the program could be more effective if it were to include a stronger phonological component (Iversen & Tumner, 1993; Hatcher, Hulme, & Ellis).

ICARE is a homespun version of Reading Recovery developed to meet Davidson County Schools' need for an effective reading intervention program for at-risk students. This program incorporates the lesson framework and effective components of Reading Recovery. The program also uses a structured phonological component (Morris, 1992). ICARE also incorporates an spin-off of Darrell Morris's reading diagnostic assessment. The Davidson County Schools hoped the rewards of its ICARE program would include cost savings and children's success in school.

An integral component of any school program implemented is a review of its outcomes. Although the program has many components associated with effective reading interventions, the program has never before undergone a thorough administrative review. Examining the long term effects and actual cost may be most appropriate in the administrative review of programs that are already in place. The review should include achievement effects and academic performance indicators. Cost should be viewed from the standpoint of additional cost above normal educational expenses and adjusted for cost savings in other intervention programs.

CHAPTER III

METHODOLOGY

This study was designed to investigate the effectiveness of an early reading intervention program, Intensive Care Assures Reading Enhancement (ICARE). The setting for this longitudinal study was in a rural public school district in a southeastern state. ICARE was first implemented in the 1993-94 school year in nine elementary schools in Davidson County and was expanded to include all 13 elementary schools in the 1994-95 and 1995-96 school years. Three cohorts of students who participated in the ICARE program in the first grade were studied. For this study, multiple dependent variables were used. The single independent variable was participation in the ICARE program.

Specific research questions addressed by the study included the following:

1. Did the ICARE program meet its goals of raising students' reading skills to district norms?
2. Was ICARE more effective than traditional methods of reading interventions available in Davidson County?

3. Was ICARE more cost-effective than other traditional methods of reading interventions over time?

Procedure

Subjects

The students admitted to the ICARE program became the treatment groups. Since ICARE's inception in 1993-94, every student served by the program was identified to participate in this study for a total of 344 students. Due to attrition, the total number of participants was reduced to 334 (137 females and 197 males). The participants were divided into three cohorts according to the year served in ICARE (see Table 1). All participants were from one rural school district. Nine out of 11 of the elementary schools qualified for Chapter 1 services.

For this study, a pool of at-risk reading students was identified by kindergarten teachers. Students were classified as at-risk for reading difficulties by a Chapter 1 readiness assessment instrument. From this pool, at-risk students were selected for ICARE screening based on the program requirements. Next, the selected students completed an ICARE screening instrument that assessed alphabet knowledge, word concept, phonemic awareness, and sight word recognition. Students who scored below 20 on the local screening assessment were listed as candidates for the ICARE program. If the ICARE teacher and the candidate's classroom teacher mutually decided the candidate

would benefit from the program, the candidate was admitted to the program. The remaining first grade at-risk reading students were served by traditional methods.

Measures

This study measured the effects of the independent variable, ICARE treatment, on the dependent variables reading achievement and academic performance. Six sources of data constituted indicators of the dependent variables in the study. These sources consisted of both conventional testing and indicators of student success in school. In this study, reading achievement was defined as proficiency in reading skills. These skills included reading new text passages, developing a broad vocabulary, comprehending text, acquiring phonemic awareness and recognizing the alphabet. Academic performance for this study was defined as success in a classroom setting.

Achievement indicators

The first form of achievement indicator utilized in the study was a district-wide reading assessment program. This assessment program was first administered in the 1994-1995 school year. Before this program was instituted, no complete data set existed for the first and second grade students in the Davidson County schools. This study utilized the running records section of the assessment. Running records provided useful

Table 1

Study Participants

	ICARE Treatment group					At-risk Control group					District population				
	White		Minority			White		Minority			White		Minority		
Group	M	F	M	F	n	M	F	M	F	n	M	F	M	F	n
Cohort 1 served 1993-94	38	22	2	-	62	31	23	-	-	54	670	611	18	16	1,315
Cohort 2 served 1994-95	98	68	2	2	170	64	75	-	-	139	727	603	19	16	1,365
Cohort 3 served 1995-96	35	30	3	2	70	49	38	3	-	90	*	*	*	*	*
total	197	137	7	4	334	144	136	3	-	283	1,397	1,214	37	32	2,680

*information unavailable

Table 2

Demographic Information on Study Participants

	ICARE Treatment group			At-risk Control group			District population		
Group	Retained	Free lunch	Reduced	Retained	Free lunch	Reduced	Retained	Free lunch	Reduced
Cohort 1 (age 8)	10	17	3	9	12	7	53	180	58
Cohort 2 (age 7)	14	35	10	5	20	15	101	187	61
Cohort 3 (age 6)	-	13	4	-	*	*	*	*	*
total	24	52	17	14	32	22	154	367	119

* information unavailable

information about students' ongoing success in reading, in addition to, their abilities to self-correct word recognition errors. Running records have proven to be a valid and reliable test of reading progress (Clay 1979, 1985).

The running record scores were reported as percentage correct when reading a specific passage from trade books. The passage used for this testing procedure was not used for instruction and was the same for each student in a specific grade level. This passage was purported by the publisher to be at the grade level for which the test was given (see Appendix B). The first and second grade passages were grade leveled using the Dale-Chall method. The district maintains that a student scoring at or above 95% on this test is reading at the independent level for that grade. Students were asked to read a passage without previous review of the text. Individually, children were asked to read the passage while the teacher recorded reading behavior using Clay's running record technique (Clay, 1985) and calculated an accuracy level.

The California Achievement Test, Form E, is a group-administered test. The ICARE students were administered the vocabulary and comprehension portions of the CAT which formed a composite reading score. This score was an indicator of reading achievement. The CAT was administered to ICARE students to compare their reading skills to national norms. The CAT was administered at the end of the second grade to ICARE students under normal conditions and reported in NCE scores. This converted NCE scale had a mean of 50, with a range of 1-99, and a standard deviation of 21.06.

A third set of test data indicating reading achievement was the ICARE screening assessment. This instrument was used to screen referred students upon entry into the program. The screening assessment in this study was used to make comparisons between ICARE students and a control group to determine gains made in rudimentary reading skills. The screening assessment was completed over a two day period and administered individually. This instrument was developed by district school personnel based on the Early Reading Screening Instrument (ERSI) from Darrell Morris (1992). The instrument was administered upon completion of the program (see Appendix C). In 1995, post test data was collected on the ICARE students and a control group was not served by the program. This allowed for a quasi-experimental comparison.

The first section of the assessment was alphabet knowledge. The student was asked to identify both upper-and lower-case letters and produce the alphabet using upper or lower case letters. The total score was recorded.

In the second section, phonemic awareness was assessed. This task required the student to assign letters to the sound heard within words. The teacher asked the student to listen carefully to the words he said and to write the letters he heard in each word.

The third section of the screening asked the student to identify both basal and decodable words. The student was shown the list of words from both the basal and decodable lists. The teacher pointed to the word as the student read and marked + if

correct and - if incorrect. Substitutions were written in by the teacher. The total number possible for word recognition was 10 for basal words and 10 for decodable words.

The fourth section of the screening required the student to track print accurately. The teacher modeled finger pointing reading of a sentence, and the students were asked to emulate the teacher. The teacher recorded the success of the student's fingerpointing attempt. The teacher also pointed to underlined words in the sentences and asked the student to identify the words.

In order to determine a screening score, the percent correct was divided by 10. The sections were then totaled for an aggregated score. Students who scored below 20 were eligible for ICARE.

Writing fluency and a running record were on the screening assessment but were not incorporated into the screening score. Teachers did take into account these sections when placing students into the ICARE program.

Academic performance indicators

Grades assigned by the classroom teachers were used as an indicator of academic performance. These data indicated how well the ICARE student was performing in the regular classroom. In spite of the lack of a clearly and objectively defined reference system, grades have considerable meaning. This is evidenced by the predictive validity they have for subsequent academic performance (Hopkins & Stanley, 1981). Letter

grades in this study were converted to numerical data according to the following conversion key: A=5; B=4; C=3; D=2; E=1.

A direct indicator of whether ICARE students were successfully performing in school was retention rate. Students in Davidson County were retained on the basis of failing more than a predetermined number of courses. The major reason students were retained in first grade was poor reading skills (Smith & Shephard, 1987). A low number of retentions of ICARE students would be an indication of students performing successfully in the regular classroom. Retention was coded as 1 and non-retention as 0 for data analysis. The retention rate was reported as a percentage of students retained in each grade in executing design C.

Another indicator of whether ICARE students were performing successfully in school was if they were not accepted into the special education program. Acceptance in the special education program demonstrated that the ICARE student was continuing to have difficulty performing in the regular classroom. For data analysis, special education acceptance was coded as 1, and non-acceptance was coded as 0. This data were reported as a percentage of children referred and accepted in executing design C.

Cost data

Costs of the ICARE program, Chapter 1, special education program, and retentions were determined based on expected parent involvement time and monetary cost

to the school system. Cost figures were produced by the school system and included labor and materials cost for each program per year outside the normal expenditures for non-identified children. Data was also gathered from the literature and district officials to determine length of time students remained in the programs.

Treatment

The ICARE program provided 30 minute daily one-on-one tutorial services to at-risk first graders and was intended to accelerate learning for low achieving reading students in order for them to catch up with the average readers in their respective first grade. The unique aspect about the ICARE program is that it was designed by Davidson County personnel based on a tutorial reading program created by Marie Clay and a screening assessment by Darrell Morris.

The ICARE program is a highly structured program. The daily format included the following:

1. High frequency practice (2 minutes). The students practiced quickly writing words with which they were familiar or with words that they wrote in the sentence the previous day.

2. Rereading familiar books (3 minutes). The students selected two or more familiar books from the Heath series. This insured students were beginning with success and provided valuable repeated readings.

3. Running record (3 minutes). The students reread the previous day's new book as the teacher took a running record. This process documented fluency, development of strategies, and word analysis needs.

4. Word analysis/word study (5 minutes). Word analysis stemmed directly from the rereading of yesterday's book. Word study began with the alphabet. When the students have 19 to 20 words well-established, they move to beginning consonants, then to word families, and eventually to vowels.

5. Sentence dictation (5 minutes). The students were prompted to write their own ideas. As the students wrote, the teacher provided assistance as needed. High frequency words were important for the students' reading fluency. This was the students' opportunity to learn that words were units.

6. Arranging the cut up story (2 minutes). The students' sentences were cut up into language units that could be reassembled. Larger segments of the sentence were initially used then descending through to phrases, words, structural segments, or clusters of letter and single letters.

7. New book introduced (5 minutes). The students attempted a new book after being introduced to it. The books were at the students' instructional level with 90% to 95% accuracy.

ICARE teachers were licensed teachers who were employed part-time. A lead teacher provided in-dept training for the ICARE teachers. Typically, teachers were introduced to the program in five full day workshops at the beginning of the school year. Other half-day workshops were scheduled on teacher workdays to deal with problems the teachers were experiencing. Videotapes were produced to critique ICARE teaching strategies. Most importantly, the lead teacher monitored and assisted the teachers on a weekly basis to provide modeling and feedback as needed.

Students were served in the ICARE program one-on-one for one semester. Students were assessed midyear to document progress, to release students, or to provide a different placement for students. Students who were released were monitored regularly

to assure that continued progress was maintained. In some cases, students may have been placed in group tutorials or may have met on an individual basis for additional support.

ICARE had a strong parent component. Once students were selected, the ICARE teacher requested a meeting with the parent. At the meeting, the ICARE teacher explained the program, discussed what the student would be involved in during a teacher session, and a parental contract was signed. Parents were responsible for reading with the child 15 minutes each night. The ICARE teacher maintained contact with parents on a weekly basis through handwritten notes, and quarterly progress reports were sent home. Videotapes of student lessons were sent home for parental viewing.

Design A

In design A, the study investigated whether the ICARE program met its goal of raising students' reading skills to the district norms. In order to determine ICARE's effectiveness, comparisons were made between ICARE students and either district norms or national norms. District norms were derived from all students in the district in the same grade as the ICARE cohort. For each set of data, mean and standard deviation were calculated. Inferential statistics were applied to this descriptive information. One sample t-tests were used to develop a longitudinal view of ICARE students in relation to districts norms. All t-tests were two-tailed and run at the 0.05 level of significance. Since the analysis was longitudinal, separate t-tests were performed for each grade level for which

data was available. T-tests were run separately for each cohort in order to glean trends in effectiveness. Procedures are summarized in Table 3. The following formula was used in calculating the t statistic:

$$t = \frac{\sqrt{(X-\mu_0)}}{SE_x}$$

where:

$$SE_x = \frac{s}{\sqrt{n}}$$

(Shavelson, 1988).

Running records from the district assessment were compared to district norms to test the hypothesis that ICARE students were reading at the same level as their peers. Percentage of students scoring at or above 95% on the running records for the district assessment was calculated for each group and compared to test the hypothesis that the program met its goal of bringing 80% of its students up to grade level. This number was then compared using a chi-square test to the percentage of students in the district scoring at or above 95% on the assessment. CAT reading scores were compared to national norms to test the hypothesis that ICARE students were achieving reading skills to the same levels as the national norm for the age cohort. Retentions and special education participation rates were compared to district norms to test the hypothesis that ICARE students were performing in school as well as their peers.

Design B

In design B, the study compared the ICARE treatment to traditional reading interventions available in Davidson County. The three cohorts of ICARE students were compared to three control groups of same age students. For the first two cohorts, a matched-pair format was used. Equivalent students were selected from the same schools as the ICARE students. This group was matched by gender, by kindergarten teacher, and by score on a Chapter 1 screening instrument obtained at the end of the students' kindergarten year. The instrument was based on teacher judgment and scored as follows:

0 = Student is functioning at or above grade level
1 = Student is functioning slightly below grade level
2 = Student is functioning moderately below grade level
3 = Student is functioning greatly below grade level

This instrument was completed by kindergarten teachers on their students before they were promoted into first grade (see Table 4). When more than one student fulfilled the criteria, a dice roll was used to select a student for the control group.

For the third cohort, a district wide assessment was used to match students. This assessment, administered at the end of kindergarten, has an ERSI-like scale. Alphabet recognition, alphabet production, literacy checklist, and tracking of print were assessed in the instrument. Control group students were drawn from a district produced sample of students at-risk but not served by ICARE. The control group was trimmed to bring its mean and standard deviation to a level that was not statistically significantly different

Table 3

Overview of Design A

Measures	Cohort	Control groups	Data collection	Grade level	n ICARE	nDistrict
District assessment	1	district norms	spring 1995	2	51	1,315
	2	district norms	spring 1995	1	170	1,365
Percent above 95% on Running Record	1	district norms	spring 1995	2	51	1,315
	2	district norms	spring 1995	1	170	1,365
CAT -Reading	1	national norms	spring 1995	2	62	
Total retentions	1	district norms	spring 1994	1	57	1,315
	1	district norms	spring 1995	2	51	1,315
	2	district norms	spring 1995	1	170	1,365
Special education participation	1	distict norms	spring 1995	2	57	1,315
	2	district norms	spring 1995	1	170	1,365

Table 4

Overview of Design B

Measures	Cohort	Control groups	Data collection	Grade level	no. of students examined ICARE	Control
District assessment	1	at-risk	spring 1996	2	51	51
	2	at-risk	spring 1996	1	170	139
Percent above 95% on Running Record	1	at-risk	spring 1995	2	51	51
	2	at-risk	spring 1995	1	170	139
Total retentions	1	at-risk	spring 1994	1	57	54
	1	at-risk	spring 1995	2	51	51
	2	at-risk	spring 1995	1	170	139
Special education participation	1	at-risk	spring 1995	2	57	54
	2	at-risk	spring 1995	1	170	139
Reading grades	1	at-risk	spring 1994	1	38	34
	1	at-risk	spring 1995	2	38	36
	1	at-risk	spring 1996	3	31	33
	2	at-risk	spring 1995	1	124	99
	2	at-risk	spring 1996	2	125	99
Screening scores	3	at-risk	spring 1996	1	70	90

from the ICARE group. Scores were used only for those students included in the trimmed control group.

For each measure, a single contrast group was used for comparison purposes. For each set of data, mean and standard deviation were calculated for each group. Inferential statistics were applied to this descriptive information. Due to the attrition rate of the control group, matched-pair analysis was not possible. The variances of the groups were significantly different at the 0.05 level. Therefore, pooled variance independent group t-tests could not be performed. All nonpooled variance independent group t-tests were run at the 0.05 level of significance. The following formula was used:

$$t = \frac{(\bar{X}_E - \bar{X}_C)}{\sigma_{\bar{X}_E - \bar{X}_C}}$$

where:

$$\sigma_{\bar{X}_E - \bar{X}_C} = \sqrt{\sigma^2_{\bar{X}_E} + \sigma^2_{\bar{X}_C}}$$

(Shavelson, 1988).

Since longitudinal information was desired, separate tests were performed for each grade level for which data was available. Tests were run separately for each ICARE cohort in order to glean trends in effectiveness. Procedures are summarized in table 4.

Running records from the district assessment were compared to a control group to test the hypothesis that ICARE students were reading at the same level as students treated with traditional reading interventions. The percentage of students scoring at or above 95% on the running records for the district assessment was calculated for each

group and compared using a chi-square test. Reading grades were compared to a control group to test the hypothesis that ICARE students were performing as well in the regular classroom as students treated with other interventions. Retentions and special education participation rates were compared to a control group to test the hypothesis that ICARE students were performing in school as well as students treated with traditional reading interventions. Screening assessment scores were compared to a control group to test the hypothesis that students served by ICARE performed significantly better than students not served by ICARE.

Design C

The third portion of the study compares multiple approaches to early reading difficulties in Davidson County to determine long term cost benefits. Comparisons were made between the ICARE, Chapter 1, special education, and retention programs. Estimates of parental involvement requirements beyond normal were presented per student per year. Total monetary costs for a year were divided by the number of students served. This data were presented and compared descriptively between programs. Total cost per student was estimated by multiplying annual cost per student by anticipated stay in the program. The actual cost per child in the programs was compared. The cost per child in each program was divided by the cost of the ICARE treatment. These ratios were then compared.

Finally, an estimate of marginal program cost was attempted by subtracting total expenses avoided (the number of retentions the ICARE program averted and the number of special education acceptances the ICARE program averted) from the total program cost of ICARE. The difference between projected number of retentions (based on the control group retention rate) and actual retentions for the ICARE program group was calculated. The difference between projected special education acceptances (based on the control group) and the actual acceptances was calculated. These differences were multiplied by the cost of each child that would otherwise have been treated in one of these programs. This value was then subtracted from the total cost of the ICARE program to calculate the actual cost of the program. Due to findings in design B, this marginal cost could not be validated by the literature. The marginal program cost was, therefore, not reported.

CHAPTER IV

ANALYSIS

The purpose of the study was to examine the effects of a first grade reading tutorial program, known as ICARE, on at-risk students' reading achievement and academic performance. Additionally, the study compared traditional reading intervention programs to ICARE in order to determine long-term cost benefits. To determine the effects of the ICARE intervention, data from three first year grade cohorts were examined. Three same age cohorts were in the first grade during the following school years: 1993-94, 1994-95, and 1995-96. Three research designs were formulated to correspond to the research questions in the study.

In this chapter, each of the three research questions is presented, followed by the research design, analysis of the data, and a display of comparative analysis tables. The level of significance used for all analysis of data was 0.05, and it was also noted when the test statistic was significant at either the 0.01 or 0.001 level. This information was provided to give an insight into the magnitude of variance involved. A statistic with a probability of 0.01 or 0.001 was indicative of a greater variance between groups than a 0.05.

Design A

In design A, the study investigated the research question: Did the ICARE program meet its goal of raising students' reading skills to district norms?

Achievement indicators

There were 62 total ICARE students in cohort one. Eleven of the students' scores on the district assessment were unavailable; therefore, the number of student scores was reduced from 62 to 51. Cohort one scores were compared to the same age peers in the school district at the end of the second grade. The total number of district second graders was 1315. In the ICARE cohort two, there was a total of 170 students, and all scores were available. Cohort two scores were compared to the same age peers in the school district at the end of first grade. The total number of district first graders was 1,365. This assessment has not yet been administered to students from cohort three.

A two-tailed one sample t-test was computed on the district assessment to compare ICARE students to district norms. The district running record mean for ICARE cohort one at the end of the second grade was 88.47 compared to a mean score of 94.33 for the district [t (50) = -4.94]. This difference is significant at the 0.05 and 0.001 level. The district assessment running record mean for ICARE cohort two at the end of the first grade was 91.62 compared to a mean of 93.25 for the district [t (169) = -2.61]. This difference is significant at the 0.05 and 0.01 level.

Table 5 indicates that based on the results of the test of the null hypothesis, ICARE cohort one's mean was identical to the district mean, was rejected, and the alternative hypothesis was concluded. The mean reading achievement score for the ICARE group was less than the district mean. This conclusion was reached because the test statistic -4.94 does exceed the critical value of t at both the 0.05 and 0.001 level of significance. The table also indicates that the null hypothesis of ICARE cohort two was rejected because the test statistic -2.61 does exceed the critical value of t at both the 0.05 and 0.01 level of significance.

Data from the district running records were used in computing chi-square tests (see Table 6 and Table 7). The first set of these tests was used to test the hypothesis that 80% of the ICARE students were reading at grade level. When the proportion of ICARE students in cohort one scoring above 95% on the running records was compared to an expected proportion of same group size, a value of 63.71 was obtained. This value is significant at both 0.05 and 0.001 levels of significance. Thus, the null hypothesis was rejected, and the alternative was accepted (less than 80% of ICARE students in cohort one were reading at grade level). For cohort two, when compared to an expected proportion of same group size, a value of 95.63 was obtained. This value is significant at the 0.05 and 0.001 levels of significance. Therefore, the null hypothesis was rejected, and the alternative hypothesis was accepted. This result was the same as the results for cohort one.

Table 5

Results of Design A

			ICARE		District			
Measures	Cohort	Grade	mean	standard deviation	mean	standard deviation	t	d.f.
District assessment	1	2	88.47	8.47	94.33	8.32	-4.94*	50
	2	1	91.62	8.12	93.25	14.45	-2.61*	169
95% or above	1	2	0.35		0.70			
Running record	2	1	0.50		0.73			
CAT -Reading	1	2	33.77	13.46	50		-9.49*	61
Total retentions	1	1	0.11	0.31	0.04	0.19	1.66	56
	1	2	0.08	0.27	0.03	0.18	1.18	50
	2	1	0.08	0.28	0.07	0.26	0.40	169
Special education	1	2	0.14	0.35	0.07	0.35	1.53	50
participation	2	1	0.04	0.19	0.03	0.18	0.22	169

*$p < 0.05$

A second set of ICARE tests was computed to test the hypothesis that the same proportion of ICARE students scored at or above 95% on the district running record as the total proportion in the district. When the proportion of ICARE cohort one students scoring above 95% was compared to the expected proportion, a value of 29.25 was obtained. This value was significant at 0.05 and 0.001 levels. The null hypothesis was rejected, and the alternative hypothesis was accepted (a smaller proportion of ICARE students were reading at grade level than the district norm). When the proportion of ICARE cohort two students scoring above 95% was compared to the expected proportion, a value of 45.63 was obtained. This value was significant at 0.05 and 0.001 levels. The null hypothesis was rejected, and the alternative was accepted. Thus, fewer ICARE students were reading at the district's grade level than in the district's general population.

A two-tailed one sample t-test was computed on CAT-Form E composite reading scores to compare ICARE students to national norms. The mean score of reading achievement for the ICARE cohort one at the end of the second grade on the CAT 33.77 was compared to a mean score of 50 for the national norm [t (61) = -9.49]. This difference is significant at the 0.05 and 0.001 level. Table 5 indicates that based on the results of the test of the null hypothesis, ICARE cohort one mean was identical to the national mean; the null hypothesis was rejected, and the alternative hypothesis was accepted. The mean reading achievement score for the ICARE group was less than the

Table 6

Results of Chi-Square Test in Design A

	Cohort one- 2nd grade				Cohort two- 1st grade		
95% cut off	ICARE	Goal	X^2	95% cut off	ICARE	Goal	X^2
above	18	40.8	12.74	above	85	136	19.13
below	33	10.2	50.96	below	85	34	76.50
total	51	51	63.71*	total	170	170	95.63*

*p<0.05

Table 7

Results of Chi-Square Test in Design A

	Cohort one- 2nd grade				Cohort two- 1st grade		
95% cut off	ICARE	District	X^2	95% cut off	ICARE	District	X^2
above	18	35.7	8.78	above	85	124.1	12.32
below	33	15.3	20.48	below	85	45.9	33.31
total	51	51	29.25*	total	170	170	45.63*

*p<0.05

national mean score. This conclusion was reached because the test statistic -9.49 does exceed the critical value of t at both the 0.05 and 0.001 level of significance.

In summary, on all achievement indicators, ICARE students did not achieve at the same achievement level as district norms. These results indicated the ICARE students did not achieve at the same level as their peers.

Academic performance indicators

A two-tailed one sample t-test was computed on the number of retentions at the end of each grade level to compare ICARE students to district norms. The mean number of retentions for the ICARE cohort one at the end of the second grade was 0.08 compared to a mean number of 0.03 for the district [t (50) = 1.18]. Data were not available for 11 students due to previous retentions and attrition factors. This reduced the number of ICARE participants to 51. The test statistic is not significant at the 0.05 level. The mean number of retentions for the ICARE cohort one at the end of the first grade was 0.11 compared to a mean number of 0.04 for the district [t (56) = 1.66]. Data were not available for five ICARE students. This decreased the number of ICARE students to 57. The test statistic is not significant at the 0.05 level. The mean number of retentions for the ICARE cohort two (n=170) at the end of the first grade was 0.08 compared to a mean number of 0.07 for the district [t (169) = 0.40]. This difference is not significant at the 0.05 level. Based on the results of the test of the null hypotheses, ICARE mean

retentions were identical to the district mean retentions; the null hypotheses were accepted in all circumstances. ICARE students were experiencing academic difficulties at the same level as their peers based on retention rates.

A two-tailed one sample t-test was computed on the number of special education participants to compare ICARE students to district norms. The mean number of special education participants for the ICARE cohort one at the end of the second grade was 0.14 compared to a mean number of 0.07 for the district [t (50) = 1.53]. Data were not available for 11 students due to previous retentions and attrition factors. This reduced the number of ICARE participants to 51. The statistic is not significant at the 0.05 level. The mean number of special education participants for ICARE cohort two at the end of the first grade was 0.04 compared to a mean number of 0.03 for the district [t (169) = .22]. Data were available for all ICARE students from cohort two, thus the number remained intact at 170. The test statistic is not significant at the 0.05 level. Based on the results of the test of the null hypotheses, ICARE mean special education participation was identical to the district mean special education participation; the null hypotheses were accepted in all circumstances.

In summary, on all indicators, ICARE students were experiencing academic difficulties at a rate insignificantly different from the district norm. This result translates into ICARE students performing insignificantly different from average students in the district.

Longitudinal information

When examining the longitudinal results of the study (see Table 8), it becomes apparent that there is no significant difference between ICARE and the district norms for reading level at the end of first grade. However, at the end of second grade, the mean ICARE reading level was significantly lower than the district norm. Although no statistically significant difference was found in the mean retentions, the difference between the ICARE mean and district norm decreased between first and second grades. Upon analyzing special education participation, it was found that the difference between the ICARE mean and district norm increased between first and second grades.

Table 8

Longitudinal results of Design A

Measures	Grade 1		Grade 2	
Cohort	t	d.f.	t	d.f.
District assessment				
1			-4.94**	50
2	-2.61*	169		
Total retentions				
1	1.66	56	1.18	50
2	0.40	169		
Special education participation				
1			1.53	50
2	0.22	169		

*p<0.05
**p < 0.001

In summary, longitudinal results appear to be confounding. ICARE students do not achieve at the same level as their peers. They do perform in school at a similar level to their peers. The achievement gap on the district assessment widened over time. Special education participation increased over time, indicating poorer performance over time. Based on retention rates, however, ICARE students performed better over time.

Design B

In design B, the study investigated the research question: Was ICARE more effective than traditional methods of reading interventions available in Davidson County? Control groups were used to glean information vital to answering this question.

Achievement indicators

There were 62 total ICARE students in cohort one. Eleven of the ICARE students' scores on the district assessment were unavailable; therefore, the number of student scores was reduced from 62 to 51. Cohort one scores were compared to the same age peers in a control group at the end of the second grade. Data on three of the 54 students in the control group were unavailable. Therefore, the number of control group participants was decreased to 51. In the ICARE cohort two, there was a total of 170 students, and all scores were available. Cohort two scores were compared to the same age peers in a control group at the end of first grade. Data on one of the 139 students were

Table 9

Results of Design B

			Control group		ICARE			
Measures	Cohort	Grade	Mean	Standard Deviation	Mean	Standard Deviation	t	d.f.
District assessment	1	2	89.51	12.90	88.47	8.47	-0.48	100
	2	1	91.83	14.61	91.62	8.12	-0.15	306
95% or above	1	2	0.51		0.35			
Running record	2	1	0.63		0.50			
Total retentions	1	1	0.06	0.23	0.11	0.31	0.96	109
	1	2	0.12	0.33	0.08	0.27	-0.66	100
	2	1	0.04	0.19	0.08	0.28	1.76	306
Special education	1	2	0.07	0.26	0.14	0.35	1.12	109
participation	2	1	0.04	0.19	0.04	0.19	-0.03	306
Reading grades	1	1	3.47	0.83	3.26	0.98	-0.37	70
	1	2	3.56	0.88	3.42	0.79	-0.25	72
	1	3	3.42	1.12	3.42	0.96	-0.01	62
	2	1	4.06	1.03	3.54	0.86	-4.03**	221
	2	2	4.09	0.89	3.62	0.98	-1.62	221
Screening assessment	3	1	20.97	5.94	27.60	5.65	10.60**	157

*$p<0.05$

** $p < 0.001$

unavailable. The ICARE and control groups were initially matched pairs based on Chapter 1 needs assessment at the end of kindergarten. Early attrition factors decreased group size of the control group.

A two-tailed independent group t-test was computed on the district assessment to compare ICARE students to the control group (see Table 10). The mean district running record score for the ICARE cohort one at the end of the second grade was 88.47 compared to a mean score of 89.51 for the control group [t (100) = -0.48]. This difference is not significant at the 0.05 level. The mean district assessment running record score for ICARE cohort two at the end of the first grade was 91.62 compared to a mean score of 91.83 for the control group [t (306) = -0.15]. This difference is not significant at the 0.05 level.

Table 9 indicates that based on the results of the test of the null hypothesis, ICARE cohort one mean was identical to the control group mean; the null hypothesis was accepted. The mean reading level for the ICARE group was the same as the control group mean. The table also indicates that the null hypothesis of ICARE cohort two was accepted.

Data from the district running records were used in computing chi-square tests (see Table 11). These tests were computed to test the hypothesis that the same proportion of ICARE students scored at or above 95% on the district running record as the total proportion in the control group. When the proportion of ICARE cohort one

students scoring above 95% was compared to the control group proportion, a value of 4.41 was obtained. This value was significant at 0.05 level. The null hypothesis was rejected, and the alternative hypothesis was accepted (a smaller proportion of ICARE students were reading at grade level than the control group). When the proportion of ICARE cohort two students scoring above 95% was compared to the control group proportion, a value of 11.33 was obtained. This value was significant at 0.05 and 0.001 levels. The null hypothesis was rejected, and the alternative hypothesis was accepted.

There was no difference in running record mean score. The scores were skewed as evidenced by different proportions of students scoring above 95%. The highest scoring ICARE students did better than the highest scoring control group students. This skewed result would indicate ICARE had a more profound effect on some of its students than traditional responses did on any of their students.

Cohort three afforded the opportunity for the analysis of the ICARE posttest reading assessment. Before conducting an analysis of the ICARE reading assessment posttest scores to determine if there was a statistically significant difference between the ICARE group and the control group, it was necessary to examine the pretest scores to assess whether there were pre-treatment differences between the two groups. The pretest means for the groups were significantly different at the 0.20 level. Students with extremely low scores on the pretest were excluded from the control group until the difference between the means was not significant at the 0.001 level. A two tailed t-test

Table 10

Results of Chi -Square Test in Design B

	Cohort one- 2nd grade				Cohort two- 1st grade		
95% cut off	ICARE	Control	X^2	95% cut off	ICARE	Control	X^2
above	18	25.5	2.21	above	85	106.5	4.25
below	33	25.5	2.21	below	85	63.75	7.08
total	51	51	4.41**	total	170	170	11.33**

*p<0.05
**p<0.001

for independent samples was computed on the pretest scores. The pretest means for the ICARE group and control group were 17.04 and 17.04, respectively. The value of the test statistic was 0.00. Thus, the groups were equivalent. The mean ICARE score on the post test was 27.60 compared to a mean score of 20.97 for the control group [t (157) = 10.60]. This difference is significant at the 0.05 and 0.001 levels. The null hypothesis was rejected, and the alternative hypothesis was accepted. The analysis revealed that the ICARE mean was greater than the control group mean on the ICARE screening instrument after the program was completed.

In summary, ICARE students did at least as well on all achievement indicators as the control group. On the screening assessment, ICARE students outperformed control group students in a remarkable fashion. Although mean scores on the district assessment were equivalent, some ICARE students performed substantially better than any of the control group students. These results indicate that ICARE had at least the same positive effects on students that traditional responses to reading difficulties had.

Academic performance indicators

A two-tailed one sample t-test was computed on the number of retentions at the end of each grade level to compare ICARE students to a control group. The mean number of retentions for the ICARE cohort one at the end of the second grade was 0.08 compared to a mean number of 0.12 for the control group [t (100) = -0.66]. Data were not available

for 11 ICARE students and three control group students due to previous retentions and attrition factors. This reduced the ICARE group to 51 and the control group to 51. The test statistic is not significant at the 0.05 level. The mean number of retentions for the ICARE cohort one at the end of the first grade was 0.11 compared to a mean number of 0.06 for the district [t (109) = 0.96]. Data were not available for five ICARE students. This reduced the number of ICARE students to 57. The control group remained constant at 54. The test statistic is not significant at the 0.05 level. The mean number of retentions for the ICARE cohort two at the end of the first grade was 0.08, compared to a mean number of 0.04 for the control group [t (306) = 1.76]. This difference is not significant at the 0.05 level. Based on the results of the test of the null hypotheses, ICARE mean retentions were identical to the control group mean retentions; the null hypotheses were accepted in all circumstances.

A two-tailed one sample t-test was computed on the number of special education participants to compare ICARE students the control group mean. The mean number of special education participants for the ICARE cohort one at the end of the second grade was 0.14 compared to a mean number of 0.07 for the control group [t (109) = 1.12]. Data were not available for 11 ICARE students from cohort one due to previous retentions and attrition factors, reducing the number to 51. The control group for cohort one remained intact with 54 students. This difference is not significant at the 0.05 level.

The mean number of special education participants for ICARE cohort two at the end of the first grade was 0.04 compared to a mean number of 0.04 for the control group [t (306) = -0.03]. Data were available for all ICARE students from cohort two, thus the number remained intact at 170. The control group for cohort two was reduced to 138 students due to unavailability of data for one student. The test statistic is not significant at the 0.05 level. Based on the results of the test of the null hypotheses, ICARE mean special education participation was identical to the control group mean special education participation; the null hypotheses were accepted in all circumstances.

Reading grades were coded according to the following scale: A=5; B= 4; C=3; D=2; E=1. Two tailed independent group t-tests were computed to test the hypothesis that the average letter grade earned by an ICARE student was equal to the average earned by a control group student. These analyses were summarized in Table 9. With the exception of scores from cohort two, the test statistic was not significant at .05 level. Thus, the null hypotheses were retained.

A comparison of cohort two's mean letter grades to the control group's mean letter grades was computed. The test statistic for first grade [t (221) = -4.03] was significant at the 0.05 and 0.001 levels. Therefore, the null hypothesis was rejected, and the alternative hypothesis was accepted. ICARE cohort two's first grade reading grades were lower than the control group's reading grades. The test statistic for second grade [t (221) = -1.62] was not significant at the 0.05 level. Therefore, the null hypothesis was

accepted. ICARE cohort two's second grade reading grades were the same as the control group's reading grades.

The academic performance indicators connote similar academic performance between the ICARE students and the control group. Retention rates were insignificantly different between the ICARE students and the students treated with other responses. Special education participation results were similar in character to the results of retention analysis. Both of these indicators connote students having the same level of academic difficulties whether they participated in ICARE or traditional responses. Reading grades (with the exception of one outlying result) indicated both groups of students performed similarly.

Longitudinal information

When examining the longitudinal results of the study, it becomes apparent that there is no significant difference between ICARE and the control groups for reading level at the end of first or second grade. Although a statistically significant difference was found in the mean retentions in the first grade, the difference between the ICARE mean and the control group mean decreased between first and second grades. At the end of second grade, there was no significant difference between the groups. An analysis of special education participation found that the difference between the ICARE mean and control group increased between first and second grades.

Table 11

Longitudinal results of Design B

Measures	Grade 1		Grade 2		Grade 3	
Cohort	t	d.f.	t	d.f.	t	d.f.
District assessment						
1			-0.48	100		
2	-0.15	306				
Total retentions						
1	0.96	109	-0.66	100		
2	1.76	306				
Special education participation						
1			1.12	109		
2	-0.03	306				
Reading grades						
1	-0.98	70	-0.69	72	-0.02	62
2	-4.03**	221	-1.62	221		

*p < 0.05
**p<0.001

Reading grades indicated a decrease in the difference between the means over time. Reading grades in the first grade showed a significant difference between the groups. In the second grade, the significance of this difference decreased. By the middle of third grade, there was no significant difference between the groups.

Design C

In design C, the study investigated the research question: Was ICARE more cost-effective than other traditional methods of reading interventions over time?

The total program cost for ICARE was $146,712.96. This cost served a total of 178 students. The Chapter 1 program in Davidson County encompassed $962,134.29 and served 785 students. The special education program in Davidson County had a cost of $6,807,097.00 and provided services to 2,089 students. These data were compiled by

Table 12

Results of Design C

Factors	Retention	Chapter 1	Special Education	ICARE
Budget*		$962,134.29	$6,807,097.00	$146,712.96
Number served*		785	2,089	178
Annual cost*	$4,032.11	$1,225.65	$3,258.54	$824.23
Years in program**	1	5	6	0.50
Total cost per child*	$4,032.11	$6,128.24	$19,551.26	$824.23
Cost to ICARE cost ratio	4.89	7.44	23.72	1

*figures based on Davidson county data
**based on Allington (1995)

the school district. The total program cost of each program (derived from the annual budgets for these programs) was divided by the number of students served to produce an

average annual cost per child (see Table 12). For comparison purposes, the cost of educating a child in the Davidson County Schools was used for the monetary cost of retention. These costs were then multiplied by the number of fiscal years the student is typically served by the program. This gave a lifetime cost figure for each student.

Comparisons were made by dividing the total cost per child by the ICARE cost per child. This produced a cost ratio to the ICARE program. The highest cost ratio was the special education program with a 23.72:1 ratio. Chapter 1 and retention practices showed 7.44:1 and 4.89:1 ratios, respectively. A marginal cost analysis was attempted. The procedure was to subtract the cost normally incurred by a child being treated with a traditional intervention from the total program cost for each child treated with the ICARE program instead of a traditional program. This procedure proved ineffective since the ICARE group did not have a significantly lower referral to special education or retention rate than was observed in the control group.

A final analysis was performed on parental time cost. The ICARE program was the only program in the school district to require a time commitment. The 15 minutes the parents agreed to spend with their child (at the start of the program) was multiplied by the five days each week they were expected to help the child . This weekly time cost was multiplied by the 18 weeks a child spent in the ICARE program. This number was divided by sixty to produce a number of hours spent while the child is in the program.

Total parental time commitment for the ICARE program was 22.5 hours over eighteen weeks.

ICARE was the lowest cost intervention in Davidson County. It did have one cost requirement unique to the program. ICARE was the only program that had a consistent time demand on parents. The other programs only required scattered time allotments from parents.

CHAPTER V

DISCUSSION, CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

Early reading intervention programs have become an important issue in education. Educators are now faced with the dilemma of selecting or developing early reading intervention programs that will help at-risk students become successful in schools. There are presently many programs available for this purpose. This study was designed to investigate administratively the effectiveness of one early reading tutorial intervention program. The program was developed by one school system to assist children who are experiencing difficulty with reading in the first grade. Specifically, the study attempted to determine if students who participated in ICARE would perform at the same level as their same age peers in the district. Alternatively, the program was compared to traditional interventions the school system currently uses. The study also compared the cost of the ICARE program to traditional reading intervention programs.

Administrators have a different philosophy in reviewing programs than researchers. Administrators need to take into account not only the effectiveness of an intervention but also its feasibility in their particular situation. To this end cost has to be a major consideration in reviewing any intervention program. One method used in the

literature to evaluate a reading intervention was to compare costs of conventional programs to the cost of the new intervention (Dyer and Brinkley, 1995). This study utilized such a system as part of the administrative review of the ICARE program.

Discussion of Findings

The following findings were based on data analysis of a district assessment test, ICARE screening test, and CAT test. Furthermore, retentions and special education participation were analyzed to glean how ICARE students fared after the program. The last portion of this study determined the relative cost of ICARE to retentions, special education, and Chapter 1.

Design A

Research Question: Did the ICARE program meet its goal of raising students' reading skills to the district norms?

Achievement indicators

The t-test performed on ICARE students from Cohort one and two showed a statistically significant difference from the district norm on the running record portion of

the district assessment. Thus, analysis of the data revealed that ICARE students performed significantly lower on the district assessment than the district as a whole. Running records were used to indicate the subjects' ability to decode words fluently (Clay, 1985). The findings indicated that students treated with ICARE did not decode as fluently as their same age peers.

An analysis of the proportion of students reading at the district established grade level revealed significant differences. The students treated with ICARE showed a preponderance of scores below grade level when compared to the district proportions. Less than 50% of the ICARE students achieved the desired 95% on the running records section of the district assessment. Compared to the 73% average for the district, the ICARE program did not produce participants readers at the same level as their peers. When examining the program's goal of raising 80% of its students to reading at grade level, the program did not meet its goals. A noteworthy point was that the district did not meet the ICARE goal of 80% of the participants reading at grade level.

The original ICARE program goal of helping 80% of participants read at grade level may be construed as unrealistic for Davidson County schools. By strict definition, the program did not meet its own goals. Part of this finding may be accounted for by a variance in definition of reading level. While the ICARE program defined grade level as 90% accuracy on predictable books used in the program, the school district used a

different definition. The Davidson County schools defined grade level as 95% accuracy on a leveled passage never used in the instruction of students.

ICARE program officials collected data that showed approximately 80% of their graduates were reading at grade level by their definition. Unfortunately, simply using the single term "reading at grade level" is confusing and rapidly becomes meaningless when multiple definitions are used. Under the district's definition, the ICARE program did not achieve its goal; under the program's definition, the program achieved its goal. District administrators need to make their own determination as to which definition of "reading at grade level" should be used to determine the effectiveness of the ICARE program.

ICARE cohort one's scores on the CAT provided a glimpse of the students' achievement compared to national norms (Lloyd, 1978). A significant difference existed between the scores of the ICARE cohort one students and the national norm for this test. The ICARE students' mean of 33.77 was well below the national norm of 50. This test encompassed both vocabulary and comprehension skills. For the purposes of this study, the disparity in standardized test scores indicated ICARE students were not achieving as well on standardized measures as other students in the nation. Although many studies used only standardized test scores in evaluating the effectiveness of a program, it provides a myopic view of program effects.

The longitudinal picture was inconclusive in this area. Cohort one was extremely different from the district in achievement; cohort two was less so. These differences were

investigated at different times after the treatment. It was difficult to account for variance between cohort one's and cohort two's deficits by the time gap. A more sound conclusion could be that the difference was an effect of the program having been in its second year of operation for cohort two. Once this cohort is tested at the end of the second grade, it may become possible to provide longitudinal conclusions.

The achievement indicators point out definitively that the ICARE program did not raise the achievement of its participants to a level equal to that of the district norm or national norm. This finding is not as bleak as it first appears. It is important to point out that the clientele for the ICARE program were not average achieving students when they entered the program. There was no evidence that these children would have reached an achievement commensurate to their peers without the ICARE program. These findings did point toward a failure of ICARE to achieve its goal of having 80% of its students functioning at grade level. The actual impact the ICARE program had on the achievement of these students could not be gauged in this portion of the study.

Academic performance indicators

Lloyd (1978) suggested that students who are retained are not experiencing academic success. Retention rates for the ICARE cohort one was higher than those for the district. Although not significant at the .05 level, they were noticeably higher. The results indicated that ICARE participants in cohort one were not experiencing as much

success in school as their same age peers. The difference in rates in cohort two was not as marked.

Allington & McGill-Franzen (1989) implied that students who are placed in special education were experiencing a lack of academic success. Though the difference between the means was not statistically significant, special education rates for the ICARE students were higher than the district average in cohort one. These results indicated students treated by the ICARE program continued to have difficulty in the regular classroom. The differences in special education rates in cohort two were negligible. This change between cohort one and cohort two could be an indication that the program was becoming more effective at promoting student success.

Juel (1988) used longitudinal data to discern patterns in the development of literacy skills. The longitudinal outlook for ICARE showed a slightly decreasing deficit in ICARE student success for cohort one. This result is encouraging that the students may be making gains in some academic performance skills even after the ICARE intervention has ceased. The study did not investigate all issues related to academic success. Possibly, some component of the ICARE program enabled these students to acquire techniques for academic success. When comparing cohort one and cohort two, it was difficult to make longitudinal comparisons since where concurrent data was available, the differences between these two cohorts were extreme.

Summary

Clay (1985) suggested that an effective reading intervention program should bring participants to the average level of their peers. After treatment by the ICARE program, the at-risk students were not performing at the same level as their peers. Use of the ICARE program could not be justified by the findings in this design. Since the students treated by ICARE were at-risk, the program should not be discounted on the results of design A. Ideally, an effective intervention would be capable of overcoming all the student's reading difficulties allowing them to perform as well as students who were never at-risk. Since the ICARE program did not meet this criteria, results of design B better assessed the value of the ICARE intervention.

Design B

Research Question: Was ICARE more effective than traditional methods of reading interventions available in Davidson County?

Achievement indicators

The major achievement indicator was the running record score on the district reading assessment. No significant difference was seen between the means for the ICARE students and the control group students. Control group students were treated with

traditional interventions provided by the district. The lack of difference on the running record scores showed that the ICARE program is equivalent to the traditional interventions for this school system on this measure.

When compiled into the rate of students performing above 95% on the running record score, the difference becomes more pronounced. A far smaller proportion of ICARE treated students achieved the 95% level than the control group students. This finding indicated that the ICARE program produced fewer of its desired effects on students than other interventions did. The ICARE program must have had a major effect on the students it did reach. This conclusion was reached by examining the results in terms of non-normal distribution. The results for the ICARE group were positively skewed by few, but extremely high scores. The results for the control group were negatively skewed by extremely low scores. Notably, this resulted in the variance between the group means being negligible, even though there was a substantial difference in the rate of high scores.

Morris (1992) proposed the use of a screening instrument to identify students who might have difficulty learning to read. The ICARE screening assessment was designed to provide an indication of students' likelihood to experience difficulties in learning to read. This instrument invested heavily in phonemic awareness and letter recognition. The ICARE program also invested heavily in phonemic awareness training and letter recognition. This effort produced an extremely remarkable difference in the

mean score on the screening assessment. The ICARE group scored significantly higher than the control group after treatment, even though their assessment scores were equivalent before ICARE intervention. Students treated by ICARE no longer qualified as students likely to experience difficulty learning to read as evidenced by the screening assessment.

Longitudinally, there was no noticeable change in achievement level differences from the end of first grade to the end of second grade. Differences noted on the screening assessment illustrated a difference in the acquisition of skills necessary for learning to read. The differences noted on the screening assessment did not appear to translate into differences in reading level over time. It is important to note that ICARE intervention ends in first grade. Students in the control group who were treated through Chapter 1 and special education continued to be served through second and into third grades. The results revealed that ICARE to some extent had the same effect long after the intervention was terminated as interventions that were ongoing.

Academic success indicators

At the end of first grade, ICARE students tended to be retained at twice the rate of the control group. This indicated that ICARE students were not experiencing academic success as well as control group students. By second grade, ICARE students were retained 33% less frequently than control group students. These findings were

confounding. A possible explanation was that the increased frequency of ICARE retentions in first grade was counterbalanced by the decreased level of ICARE retentions in the second grade. A second explanation involved the increased inspection of the ICARE students; they were retained earlier in their careers than they otherwise would have been. In either case, it was difficult to discern a real difference in academic success as evidenced by retentions.

Special education participation showed a distinct pattern. The difference in participation rates was negligible in the first grade. The rates were different in second grade with the ICARE average higher than the control group. This change could be accounted for in two ways. First, the incidence of first grade special education participation is exceptionally low. This low rate may mask actual differences in academic success. Second, during the first grade year, the ICARE students received one-on-one tutorial services. These services may have increased academic success during the intervention. When in second grade, the students did not have this additional support and began to experience academic problems that would otherwise would have appeared during the first grade year.

Reading grades were correlated to academic success by Lloyd (1978). Reading grades elucidated a definite trend in academic success for ICARE students. When examining differences between the groups, longitudinally the disparity decreased over time. Combined with data from design A, it became clear that the ICARE students were

increasing in success to meet up with the control group. In the case of cohort two, ICARE students' grades were significantly lower than the control group's. For these same students, the gap had closed to being statistically insignificant by the middle of their second grade year. Cohort one's grades had become indiscernible from the control group by the middle of the third grade year. Either the students in the district and control group decreased in academic success as they progressed through the grades, or some change must be occurring in the students treated by the ICARE program. This change occurred even after discontinuance of treatment. Although the data suggested no explanation of what this change might have been, the acquisition of some academic performance skills was assumed.

Over time, differences in academic performance between the ICARE and control groups generally declined. This decline showed the ICARE students were obtaining success at a level more closely approximating the success of the control group. This finding indicated that ICARE has long term effects similar to traditional interventions. It is important to note that some of the interventions used on the control group were ongoing. Carter (1984) found that students who are having difficulty learning to read fall farther behind without appropriate interventions. The ICARE students were performing better in comparison with the control group even though their intervention was discontinued in the first grade. This finding indicates that the students in the control

group were not receiving appropriate interventions. In this respect, ICARE appeared to be a positive alternative to traditional interventions.

Summary

The results of design B indicated ICARE intervention was at least as effective as traditional interventions. The screening assessment revealed the ICARE program to be much more effective than traditional interventions at providing students with the skills that enable them to learn to read. On other indicators, no significant difference was observed. Over time variance between the ICARE students and the control group decreased. Crucial to this statement is the time frame of the intervention. ICARE was compared to interventions that continued through the entire longitudinal study. The short term ICARE intervention had similar impact as interventions that were continuing as the data were being collected. In this respect, ICARE appears to be a more sensible alternative.

Design C

Research Question: Was ICARE more cost-effective than other traditional methods of reading interventions over time?

The total quantity of money Davidson County Schools spent on at-risk interventions last year was impressive-- over eight million dollars combined. The largest portion of this money was spent on the special education program. No estimate was given for the total amount of money spent on retaining children. The figure would have been exorbitant considering the number of first and second grade retentions alone. Any program that could decrease some of these expenditures would surely be welcomed by administrators (Allington & Walmsley, 1995). ICARE did not appear to decrease these expenditures. This meant that it was impossible to produce an adjusted or net cost for the ICARE program.

When an adjusted total cost per child was calculated, the major strength of the ICARE program became obvious. At $824.23 per child, it is the least expensive of all interventions available in Davidson County. Retention for one year was almost five times as expensive. Special education services ran almost 24 times as expensive over the life of a student in elementary school. The key feature was the brief time frame for the intervention. Combined with data from design B, ICARE became a more reasonable alternative.

The one caveat is the issue of parental involvement time. ICARE requires 22.5 hours of parental involvement beyond what is normally expected of a parent. This time may be inconsequential to many people. This requirement limits the clientele served by the program to only those students who have support from home. If students do not

have parental support, ICARE is contraindicated. Although parental support was found in the literature review to be a characteristic of effective reading interventions, it might not be crucial to ICARE. If this parental demand were to be changed to a request, more students would be eligible for intervention by the ICARE program.

Conclusions

Although the ICARE students did not attain achievement or academic performance levels equal to the district norm, the ICARE program has many positive attributes. The ICARE program, when compared to a control group on the pre-and post-screening assessment, scored significantly higher. The ICARE program also appeared to be a viable alternative to current traditional interventions in light of the lack of significant difference to the control group. When cost considerations were entered into the review, the ICARE program became a preferred method of intervention.

Administrative issues

A major consideration for administrators is the ability to recognize significant data and interpret results so prudent decisions can be made about whether to continue a reading intervention program. Lack of administrative guidance can be detrimental on student achievement for at-risk students because most teachers spend their days doing exactly what they believe those in charge want them to do (Hyde and Moore, 1988).

Administrators who are proactive and keep abreast of current issues in reading can influence and enhance the success of reading programs (Jacobson, Reutzel, and Hollingsworth, 1992). A strength of the ICARE program was the existence of a lead teacher to coordinate program activities and train teachers for the program. The lead teacher functioned as a knowledgeable administrator who interpreted data and current reading literature. She used this knowledge to provide guidance to the teachers involved with the ICARE program.

An integral component of being a knowledgeable administrator is the ability to review reading programs. Generally, when administrators review a program in progress, there are many pitfalls. In many cases current evaluations of reading programs are superficial. Many of these evaluations have a tremendous amount of wasted data with no control group to make comparisons. The alternative hypothesis tested by these evaluations is that these children would make no progress without the program in question (Allington & Walmsley, 1995). Most importantly, some intervention programs become more effective over time (Pinnell, Deford, & Lyons, 1988). Therefore, it is difficult or impossible to gauge the effectiveness of a program in its first year.

When reviewing the ICARE program many issues became apparent. The program's previous evaluation procedures neither used comparable data sets, nor made comparisons to other reading interventions. Also, the evaluations did not take into

account the monetary costs of the program on a per pupil base or the time a child would spend in treatment.

The school district maintained records on the students' reading level gauged in a way that no other students in the district were evaluated. The ICARE program evaluated reading level based on the running record system. Student reading level was determined by the publisher's grade level for a book the student could decode with a 90% accuracy. Students in the general population other district were evaluated using a different running records scheme. To confound the difficulties, the books used in the ICARE evaluation were not used in the normal classrooms.

Other data had similar short comings. Surveys were used to validate the impact the ICARE program had on students. These surveys could not be a true indication of the effectiveness of the ICARE program since they were not checked for validity. They were not structured in a manner that would indicate specific areas of concern. Student academic success was never compared to either district norms or other at-risk groups in the district. Finally, a standardized test was only administered to these students as part of the current review.

These administrative policies made data collection for this or any meaningful review difficult. One administrative procedure that proved valuable and productive was the inclusion of all treated students in data sets. The Reading Recovery program does not

include students who were not progressing as a part of their program statistics (Hiebert, 1991). ICARE has always included any student treated in their statistics.

The final outcome of these administrative review procedures was an inefficient usage of valuable resources. ICARE teachers had to administer individual reading level evaluations to students treated by the program even though these evaluations could not be used to gauge the effectiveness of the program. The evaluations performed by the district did not point toward areas of concern such as a lack of academic success in the normal classroom over a long period of time.

This administrative review of the ICARE program took into account student performance in the regular classroom and student achievement. Particular attention was paid to the monetary costs of the program. This is of particular importance since the ICARE program requires the use of limited financial resources. Any expense incurred by the implementation of a special program requires the loss of opportunity for other educational endeavors. Their are many strong issues that validate the expenditure of funds on the ICARE program.

Reading is probably the most crucial skill for academic success (Slavin & Madden, 1989). To this end it is reasonable to expend resources in an effort to ensure at-risk students acquire the ability to read. Any program that assists in achieving this goal is worthy of consideration. The ICARE program has shown to be significantly more effective in the short-term than traditional responses. The ICARE program has also been

shown to be equally as effective as traditional interventions in long term achievement. This program is less costly and has a shorter period of intervention than conventional responses in Davidson County Schools. Given the option of implementing this program in a Davidson County School, it would be prudent to accept the program.

ICARE does not solve all the problems faced by children at-risk for reading failure. Evidence of this was provided in design A by the ICARE students averaging lower than the district norm. However, ICARE does assist students in the acquisition of reading skills. This is evidenced by the increased achievement of ICARE students compared to the control group. Administratively, the strengths of the program should be highlighted while seeking to identify weaknesses. It behooves an administrator to seek a way to bring reading ability of at-risk students closer to the school norm.

Design C of the review dealt with a major strength of the program, cost. For administrators, the issue of cost is a crucial factor in maintaining any program. The costs for each reading response was calculated in design C. These costs were compared on the basis of total cost per child served. ICARE is the least costly reading intervention for at-risk students available in Davidson County. If a child could be served by ICARE instead of participating in the special education program, the cost savings could be enormous. A child who is placed in special education in first grade is likely to remain in the program throughout elementary school with a total cost of $19,551.26. The usual treatment for a child in ICARE lasts one semester with a total cost of $824.23. The savings amount to

$18,727.03. This is a substantial sum of money for any school district. The only caveat is that ICARE treatment may not remove the need to place the child in the special education program. In this case the cost savings are less dramatic but still substantial. The cost of special education for a child in first grade is $3,258.54. The same child would cost the schools $824.23 in the ICARE program. By delaying entry into special education by this one year, the school stands to gain a child who does not require continued intervention and to save $18,727.03. A possible negative outcome would be for the child to enter special education in second grade and save the school district $2,434.31.

The other alternative interventions in Davidson County schools are retention and Chapter 1 services. Similar savings are possible by using ICARE as a first option response to children experiencing difficulties in learning to read. The possible savings from avoided retentions would be $3,207.88 per child. The possible savings for replacing Chapter 1 services total $5,304.01 per child. The least savings from using ICARE instead of one year of Chapter 1 services would be $401.42 per child. Although ICARE does not reach every at-risk student, it is at least as effective as the traditional responses in the Davidson County schools. The responses to reading difficulties in Davidson County do not reach all at-risk students. Some students may require a different program to meet their needs properly. The ICARE program holds major promise in the ability to treat at-

risk students inexpensively and to make money available to provide treatments to reach those at-risk students who do not respond to ICARE.

ICARE is a valuable attempt to address the needs of at-risk readers. Several indicators in the study imply the program does not bring participants up to the same level as their peers. These same indicators also suggest ICARE is at least as effective as the traditional, expensive responses to reading difficulties available in Davidson County. The administrative issue is "Should the program be continued?" To answer this question, alternatives need to be explored. The program was developed to improve the quality of education for at-risk readers. If the program were to be discontinued, the at-risk readers would still be faced by the same traditional responses that lead district administrators to develop the ICARE program. The literature review indicated the traditional responses were not appropriate in meeting the needs of students. Administratively, the program's greatest strength is its low cost and its ability to produce a statistically significant short-term impact as illustrated by the pre-and post-tests scores on the screening instrument. Additionally, the program only serves students in the first grade and is as effective as the traditional interventions that continue throughout the student's elementary school years.

Program issues

It is clear that the ICARE program uses the characteristics of effective reading intervention programs outlined in the literature review. The program uses diagnostic

assessments, an early intervention approach, phonemic awareness training, letter recognition skills enhancement, reading practice, parental involvement, and a tutorial method of instruction. The incorporation of the aspects of the Reading Recovery program with phoneme awareness training is a documented highly effective method for assisting at-risk readers (Iversen & Tumner, 1993; Hatcher, Hulme, & Ellis, 1994). Similar results were found in this administrative review of ICARE. The ICARE program effectively uses these methods to impact students as much in one semester as traditional interventions do with long term support. In addition to using documented effective methods, the program is by far less expensive to alternatives in the school system. This makes the ICARE program an ideal foundation to build a program that truly meets the needs of at-risk first grade students.

The reality of the effects of ICARE on students is confounding in light of the characteristics outlined. Lyons (1989) found learning disabled readers could be brought up to the level of the class norm in a single semester of intensive tutoring with Reading Recovery. This was not the case with ICARE students. Although ICARE functions in what has been described as the "critical window of time" it does not bring students up to the same functioning level as their peers.

Two issues are elucidated by this finding. First, the ICARE students do function at the same level as at-risk peers who received continued intervention support. This finding suggests that ICARE is using the "critical window of time" to make effective

changes that have continued effect. It is clear that ICARE students did score significantly better on their post assessment than the control group did. There were no significant long-term differences in achievement or academic success between the two groups. A reasonable conclusion would be that the ICARE program needs to be extended for at-risk students into the second grade. Further investigation is warranted into this possibility. Continued support may help the students achieve and perform better in school.

The second issue is the expectation that these students will function at the same level as the norm for the district. This goal was set by the Reading Recovery literature that excludes students who do not make progress (Hiebert, 1991). The reality is that these students would not function at grade level without an intervention. Due to the significant short term impact coupled with the sustained benefits observed, the ICARE program should be viewed as successful. Even though the ICARE students do not function at district norms after one semester of tutorial; they may close the gap with an additional semester of tutorial in the second grade year.

Summary

This study had the limitation of reviewing the effects of one reading intervention program already in place in a single rural school district. Some issues of design were not maximized as a researcher beginning an experiment might have done. The crucial issue is that this is an attempt to provide a useful review of an early intervention program from an

administrative perspective. Many times programs are implemented and never reviewed in comparison with other treatments used in the school. Often copious amounts of data are compiled showing students progressing as they are treated through the program without comparable data from students not treated with the intervention.

Administrators do not have the luxury of controlling research conditions to the level of their choice. This study was limited by problems of students who were multi-served and data sets that often had no comparison group. The strength of this study was the precedent of finding data sets previously collected by the schools district. These data were then used to provide information useful in determining the effectiveness of an early reading intervention program (ICARE). This provided a framework for other administrators to use when reviewing programs that were implemented within their purview. Unfortunately, administrators often can not design measures to assess properly a program and must rely solely on data collected for other purposes. The framework from this study can help guide administrators through the process of reviewing programs already in progress.

The framework for the study can be summarized as follows:

1) Review current reading literature.

2) Identify comparable data sets.

3) Check data sets to ensure their value in discerning program effectiveness in obtaining goals.

4) Identify an appropriate control group.

5) Statistically determine differences between treatment and control groups.

6) Follow same age cohorts longitudinally.

7) Compare program costs between the program being reviewed and available alternatives. These costs should be evaluated on both per student cost and per student cost after adjusted for averted expenditures.

Implications for Administrators

The ICARE program was designed as an alternative to the expensive Reading Recovery program. In keeping with the Reading Recovery program paradigm, ICARE was designed to solve reading difficulties early and return children to the regular classroom. Clay (1985) stated this view in her theory of reading acceleration. This study did not find evidence of at-risk children functioning at the same level as their same age peers. This is not surprising in light of the results of the 1994 NAEP. NAEP found that only 30% of students were functioning at the proficient level. It is inappropriate to expect at-risk students to function at levels higher than the national average. This study did find the ICARE program to have a significant impact on the short term functioning of students. ICARE also was at least as effective as traditional expensive interventions.

ICARE reaches students at a fraction of the cost of traditional responses. It is also much less expensive than the Reading Recovery program. ICARE is a reasonable

method of reaching at-risk first graders. The program should be implemented to include any first grade student who is likely to experience difficulty in learning to read. If more students were served by the program the cost per student would decrease. This change is due to the slight marginal increase in operating expense from hiring additional teachers using the same materials already available. The administrative cost of the program does not increase with the number of students served.

Since ICARE does not completely close the gap between at-risk and non-disabled readers, it would seem appropriate to expand the program into the second and third grades to continue serving at-risk students throughout the early grades. This expansion should include both classroom teachers and additional tutorials. Classroom teachers should be trained in ICARE strategies to assist at-risk students in the normal classroom. This training would assist all students since ICARE strategies are based on effective reading instruction methods.

Students who continue to exhibit reading difficulties should be given additional tutorial treatments in the second and third grades. This change in policy may increase expense per pupil served. The advantage to this new policy could be a decreased instance of special education referrals. These referrals are expensive and would continue throughout the child's school career. ICARE is at least as effective, and has both a lower monetary cost and requires fewer modifications to the child's schooling. Special

education participation removes a child from the regular classroom. This is not the case with ICARE.

Funding for the expansion of ICARE could come from special education funds or Chapter 1 funding. ICARE treatment in the first grade appears to have the same effect as either of these programs. Both of these programs continue throughout the child's second and third grade years. These programs do not have a significantly greater impact than a single semester of ICARE treatment in the first grade. By retooling the structure of Chapter 1 and special education, children could be treated more efficiently at a lower cost.

Recommendations

Administrative changes

Administrators have definite set of goals in mind when reviewing programs. When viewed from the administrative perspective, several recommendations come to the forefront.

1) Since the results of ICARE pre- and post-tests supports short-term effectiveness of the program, additional support to ICARE students in the second grade is encouraged to sustained the effects of ICARE intervention.

2) Elementary teachers receiving ICARE students should be trained in or become familiar with ICARE strategies in order to provide supportive classroom

environments in which ICARE students can continue to grow.

3) Students experiencing reading difficulties in the second grade should be treated with tutorial assistance using ICARE strategies to increase the student's functioning and control cost. This assistance could be a part of either Chapter 1 or special education services.

4) One child should receive one intervention at a time. At present so many interventions are carried out on some students that it is difficult to tell which, if any, are producing an effect.

5) Administrators must take a proactive stance in the development of reading intervention programs. The amount of their involvement influences the success or failure of reading programs.

6) Tutorial times must be adjusted to ensure they do not impinge upon normal classroom reading periods. This practice does not allow for the full effect of supplemental instruction.

7) Measures of student achievement for ICARE students need to be structured in

a manner that allows comparison to students not involved in the ICARE program. Measures that are not structured in such a manner have limited usefulness in evaluating student progress.

8) Administrators must be knowledgeable on evaluation procedures in order to interpret meaningful data and make prudent decisions about their reading programs.

9) Where appropriate, ICARE intervention should be attempted prior to traditional interventions in an attempt to maximize monetary resources. Any child who can benefit from ICARE intervention instead of traditional interventions is less of a monetary burden on the school district. The possible benefits outweigh the possible cost of the ICARE intervention.

Further research

The ICARE program is a new program and should be the subject of further study. This study should take four distinct forms:

1) Longitudinal information on both the ICARE treated students and the control groups needs to be gathered. Information must be gathered on a regular basis

using indicators of academic performance and achievement. These indicators should encompass standardized tests and more subjective evaluations.

2) A qualitative study should be undertaken to ensure the ICARE program matches the specific needs of the at-risk population of the school system. This study should be focused around concerns specific to the constructivist paradigm.

3) District officials should conduct a study to determine the correlation of the ICARE program to the district's general reading program in goals and achievement indicators.

4) Any ICARE student who encounters difficulty in second grade reading should be studied on an individual basis to determine the nature of their problems.

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APPENDIX A

Books used by ICARE

ICARE Book Inventory

STORYBOX

A Party
Chocolate Cake
Come With Me
Clown and Elephant
Copycat
Danger
Feet
Frightened
Flying
Fizz and Splutter
Go Go Go
Going To School
Grumpy Elephant
Hello
Houses
Horace
In The Mirror
If You Meet A Dragon
I Want Ice Cream
Little Brother
Lost
Little Pig
Look For Me
Monster Sandwich
Mouse
My Home
Night Time
No No
One One Is The Sun
Oh Jump In A Sack
Painting
Plop
Round and Round
Rum-Tum-Tum
Silly Old Possum
Stop
Splosh
Sleeping Out
The Bee
The Bicycle
The Big Hill
The Ghost
The Haunted House
The Night Train
The Pumpkin
The Storm
The Tree House
To New York
Too Big For Me
Two Little Dogs
What A Mess
What's For Lunch
Where Are They Going
Who's Going To Lick The Bowl
Who Lives Here
Other
On A Chair

SUNSHINE BOOKS

Baby Gets Dresses
Dinner
Down To Town
Huggles Breakfast
Huggles Goes Away
Huggles Can Juggle
I Can Fly
The Birthday Cake

Along Comes Jake
Bread
Come For A Swim
Don't You Laugh At Me
Good Bye Lucy
The Seed
The Wind Blows Strong
Where Are You Going Aja

Dad's Headache
Little Car
My Boat
Noise
Old Grizzly
One Thousand Current Buns
The Cooking Pot
The Terrible Tiger

SUNSHINE LEVEL 1 FACT AND FANCY SOCIAL STUDIES

Building Things
Clouds
Dreams
I Wonder
Reading Is Everywhere
The New Building
The Tree
Together
Wheels

SUNSHINE LEVEL I FACT AND FANCY SCIENCE

A Small World
Alien At The Zoo
Are You A Ladybug
Dinosaurs
It Takes Time To Grow
Space
The Dandelion
The Hermit Crab
Underwater Journey
What Am I
What Else
Whose Eggs Are These

RIGBY LITERACY 2000 STAGE 2

Ants Love Picnics Too
Baby's Birthday
Bike Parade
Chew Chew Chew
Climbing
Dizzy Lizzy
Dear Santa
Going Fishing
Guess What
Green Footprints
Grandpa Snored
Surprise Cake
Summer Fun
Ten Little Men
Timmy
Too Many Clothes
The Best Plan
The Boogly
The Present
The Wedding
Visitors
We Make Music

Go Back To Sleep
Have You Seen
Hungry Horse
Hello Goodbye
I Saw A Dinosaur

Marvelous Me
Noises
Pets
Steam Train

Well Fed Bear
What Can Fly
What Did Kim Catch
What Has Spots
What Things Go Together

Wheels
When Dad Came Home
Where Is Nancy
Other

BRIAN WILDSMITH

Cat On The Mat
Other

If I Were You

LEARN TO READ SCIENCE

The Four Seasons

What's Going On

RIGBY TADPOLES

Excuses Excuses
Horrible Big Black Bug
Tricky Tracy

Forgetful Fred
Terrible Twos

RIGBY EXPLORING SCIENCE

Bird's Nest
Down The Slide
My Hamster
My New House

Sunflower
The Garden Hose
Winter

STEP INTO READING

Railroad Toad
Tiger Is A Scaredy Cat

Toad On The Road
Wake Up Sun

FIRST START EASY READERS

(Indicate how many copies you have. 5 books to a set)

Big Red Fire Engine
Bubble Gum In The Sky
Dinosaurs In Trouble

Home For A puppy
Tale Of Christmas Mouse
Three Little Witches

Here Comes Winter

TROLL
(5 books to the set)
Santa's Christmas Surprise

APPENDIX B

Running Record Passages

First Grade

A Kiss For Little Bear
by Else Minarik

"This picture makes me happy," said Little Bear.
"Hello, Hen. This is for Grandmother. Will you take it to her, Hen?"
"Yes, I will," said Hen.
Grandmother was happy. "This kiss is for Little Bear," she said.
"Will you take it to him, Hen?"
"I will be glad to," said Hen.
Then Hen saw some friends. She stopped to chat.
"Hello, Frog. I have a kiss for Little Bear. It is from his grandmother.
Will you take it to him, Frog?
"OK," said Frog.
But Frog saw a pond. He stopped to swim. "Hi, Cat. I have a kiss/// 100

Grade 2

THE ART LESSON
Written by Tomie dePaola

Tommy knew he wanted to be an artist when he grew up. He drew pictures everywhere he went. It was his favorite thing to do. His friends had favorite things to do, too. Jack collected all kinds of turtles. Herbie made huge cities in his sandbox. Jeannie, Tommy's best friend, could do cartwheels and stand on her head. But Tommy drew and drew and drew. His twin cousins who were already grown up, were in art school learning to be real artists. They told him not to copy and to practice, practice, practice. So, he did. Tommy put his pictures up on the walls of his half /(1ØØ) of the bedroom.

APPENDIX C

ICARE Screening Assessment

Screen Score _____
Status _____

ICare Screening

Student: _____ D.O.B.:_____ School: _____

Classroom Teacher: _____ ICare Teacher: _____ Date:_____

Screening Score

Total = # Correct + Total Number. Convert Total to Base 10. (.91=9.1)

Alphabet	Up 26	Low 26	Production 26		Total	#Correct	Score
	_____ a	_____ b	_____ c		78	_____	_____
Concept of Word	Point 8	Word 8	-		Total	#Correct	Score
	_____	_____	_____		16	_____	_____
Ph. Awareness Score			Sounds 42			Total	#Correct
			_____		42	_____	_____
Word Recognition			Basal 10	Decodable 10	Total	#Correct	Score
			_____	_____	20	_____	_____
Writing Fluency		Lightning Words 20			Screen Score		
		_____			_____		

Comments:

Status: _____ Not Eligible (NE) ____ Placed I (I) ____ Placed G (G) ___ Wait List (W)

ICare Screening

Name: _____ Date: _____

ALPHABET

Recognition:	A F K P W Z	B H O J U	C Y L Q M
	D N S X I	E G R V T	#correct __/26 __/26 __/26 (a) M E
	a f k p w z	b h o j u	c y l q m
	d n s x i	e g r v t	#correct __/26 __/26 __/26 (a) M E
Production:	A F K P W Z	B H O J U	C Y L Q M
	D N S X I	E G R V T	#correct __/26 __/26 __/26 (a) M E

CONCEPT OF WORD

	Pointing	Word	Words
(1) Katie is walking (1) in the rain (2).	_____	1 _____	2 ____
(2) She (1) sees a big (2) dog.	_____	1 _____	2 ____
(3) The dog (2) shakes water (1) on Katie.	_____	1 _____	2 ____

correct: (pointing) _____/3 (d) (words) _____/6 (e)

WORD RECOGNITION

1. is ____ ____ ____	5. like ____ ____ ____	8. make ____ ____ ____
2. come ____ ____ ____	6. and ____ ____ ____	9. work ____ ____ ____
3. good ____ ____ ____	7. mother ____ ____ ____	10. day ____ ____ ____
4. here ____ ____ ____		
# correct _____/10 (g) F	# correct _____/10 M	# correct _____/10 E

(basal words)

CONCEPT OF WORD

	Pointing	Words
(1) My home is here, said the bird.	_____	_____
(2) My home is here, said the frog.	_____	_____
(3) My home is here, said the pig.	_____	
(4) My home is here, said the dog.	_____	
(5) My home is here, said the rabbit.	_____	

correct: (pointing) _____/5 (d) (words) _____/2 (e)

PHONEMIC AWARENESS (Spelling)		**WORD RECOGNITION**	
1. back	_____ _____ _____	1. cap	_____ _____ _____
2. feet	_____ _____ _____	2. net	_____ _____ _____
3. step	_____ _____ _____	3. win	_____ _____ _____
4. junk	_____ _____ _____	4. bug	_____ _____ _____
5. picking	_____ _____ _____	5. fat	_____ _____ _____
6. mail	_____ _____ _____	6. mop	_____ _____ _____
7. side	_____ _____ _____	7. led	_____ _____ _____
8. chin	_____ _____ _____	8. dig	_____ _____ _____
9. dress	_____ _____ _____	9. job	_____ _____ _____
10.peeked	_____ _____ _____	10. mud	_____ _____ _____
11. lamp	_____ _____ _____		
12. road	_____ _____ _____		

correct _____/10 (h) F # correct _____/10 M (decodable) # correct _____/10 E

points _____/42 (f) F

points _____/42 M

points _____/42 E